

# OPERATION AND PARTS MANUAL



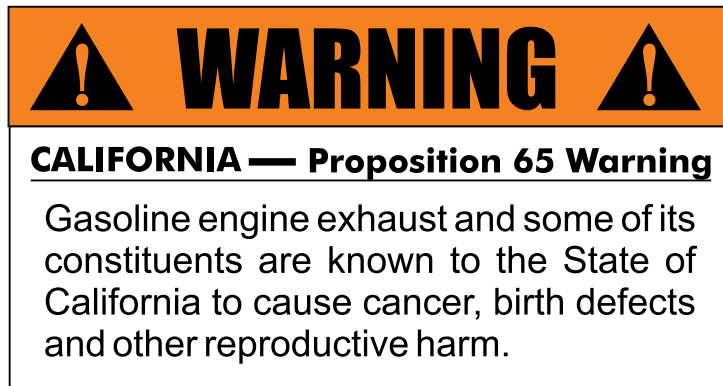
***Mikasa* SERIES**  
**MODEL MTX70HF**  
**TAMPING RAMMER**  
**(HONDA GX100UKRB5 GASOLINE ENGINE)**

Revision #0 (03/08/12)

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**THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.**



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#### NOTICE

Specifications and part numbers are subject to change without notice.

# PARTS ORDERING PROCEDURES

## Ordering parts has never been easier! Choose from three easy options:

Effective:  
January 1<sup>st</sup>, 2006



### Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



If you have an MQ Account, to obtain a Username and Password, E-mail us at: **parts@multiquip.com**.

To obtain an MQ Account, contact your District Sales Manager for more information.

Goto [www.multiquip.com](http://www.multiquip.com) and click on

**Order Parts** to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.\*

Note: Discounts Are Subject To Change



### Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

**Domestic (US) Customers dial:**

1-800-6-PARTS-7 (800-672-7877)

**Fax** your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.\*

Note: Discounts Are Subject To Change



**Order via Phone:** Domestic (US) Dealers Call:  
1-800-427-1244

### Non-Dealer Customers:

Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



**International Customers** should contact their local Multiquip Representatives for Parts Ordering information.

## When ordering parts, please supply:

- ☐ Dealer Account Number
- ☐ Dealer Name and Address
- ☐ Shipping Address (if different than billing address)
- ☐ Return Fax Number
- ☐ Applicable Model Number
- ☐ Quantity, Part Number and Description of Each Part

### ☐ Specify Preferred Method of Shipment:

- ☒ UPS/Fed Ex
- ☒ Priority One
- ☒ Ground
- ☒ Next Day
- ☒ Second/Third Day
- ☒ DHL
- ☒ Truck

### NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

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## SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.









### SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

### SAFETY SYMBOLS

|  |
|--|
|  <b>DANGER</b>                        |
| Indicates a hazardous situation which, if not avoided, <b>WILL</b> result in <b>DEATH</b> or <b>SERIOUS INJURY</b> .   |
|  <b>WARNING</b>                       |
| Indicates a hazardous situation which, if not avoided, <b>COULD</b> result in <b>DEATH</b> or <b>SERIOUS INJURY</b> .  |
|  <b>CAUTION</b>                     |
| Indicates a hazardous situation which, if not avoided, <b>COULD</b> result in <b>MINOR</b> or <b>MODERATE INJURY</b> . |
| <b>NOTICE</b>  |
| Addresses practices not related to personal injury.  |

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

| Symbol  | Safety Hazard               |
|---|-----------------------------|
|    | Lethal exhaust gas hazards  |
|    | Explosive fuel hazards      |
|    | Burn hazards                |
|   | Respiratory hazards         |
|  | Accidental starting hazards |
|  | Eye and hearing hazards     |

# SAFETY INFORMATION

## GENERAL SAFETY

### CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.
- **NEVER** operate this equipment under the influence of drugs or alcohol.



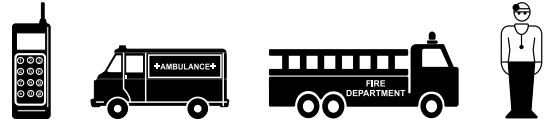
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

### NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance**, **doctor** and **fire department**. This information will be invaluable in the case of an emergency.



## RAMMER SAFETY

### DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



### WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine with confidence for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

### CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

### NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

# SAFETY INFORMATION

## ENGINE SAFETY

### DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



### WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the rammer.



### CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



### NOTICE

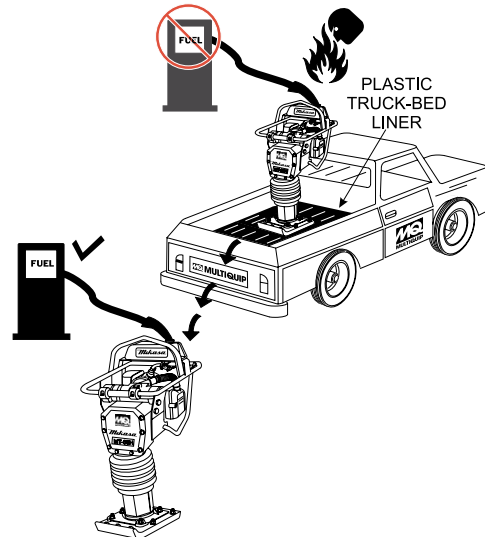
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



## FUEL SAFETY

### DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with flammable liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.





## TRANSPORTING SAFETY

### CAUTION

- NEVER allow any person or animal to stand underneath the equipment while lifting.

### NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

## ENVIRONMENTAL SAFETY

### NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters.
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.



## SPECIFICATIONS

**Table 1. Rammer Specifications**

|                              |                                |
|------------------------------|--------------------------------|
| Overall Height               | 40.04 in. (1017 mm)            |
| Overall Width                | 13.78 in. (350 mm)             |
| Over Length                  | 28.1 in. (713 mm)              |
| Shoe Size (W x L)            | 13.4 x 11.2 in. (340 x 285 mm) |
| Fuel Tank Capacity           | 2.1 qt. (2 liters)             |
| Lubrication Oil Capacity     | 0.86 qt. (0.82 liter)          |
| No. of Impacts Per Second    | 10.7 - 11.5                    |
| Impact Force                 | 2,855 lbf (12.7 kN)            |
| Impact Plate Stroke          | 2 - 3.2 in. (50 - 80 mm)       |
| Operating Weight             | 163.13 lbs. (74 kg)            |
| Measured Sound Power Level   | 104 dB                         |
| Guaranteed Sound Power Level | 107 dB                         |
| Max. Sound Pressure Level    | 94 dB                          |

**Table 2. Engine Specifications**

|                              |   |
|------------------------------|---|
| Model                        | Honda GX100UKRB5 Engine   |
| Type                         | Air-Cooled 4 Stroke, Overhead camshaft, single cylinder gasoline engine |
| Piston Displacement          | 6.0 cu.in. (98 cc)  |
| Max. Output                  | 3.0 hp/3,600 rpm (2.2 KW)   |
| Max. Governed Speed, No Load | 3,800 - 4,100 rpm   |
| Cooling System               | Air-Cooled  |
| Engine Oil Capacity          | 0.3 qt. (0.28 liters)   |
| Fuel                         | Unleaded gasoline   |
| Lubricant for Engine         | Automobile Oil; Class SE or higher                                      |
| Starting System              | Recoil Starter  |
| Spark Plug Type              | NGK CR5HSB  |

### DEFINITION OF TAMPING RAMMER

The Multiquip MTX70HF tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTX70HF levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The MTX70HF tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential.

### CONSTRUCTION OF TAMPING RAMMER

The MTX70HF is equipped with an air cooled, four- cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

### RAMMER GEARBOX AND SPRING CYLINDER

The MTX70HF uses an oil bath lubrication system. Always check the oil level through the oil level sight glass at the rear of the tamper foot.

### CONTROLS

Before starting the MTX70HF Tamping Rammer identify and understand the function of the controls.

### CAUTION



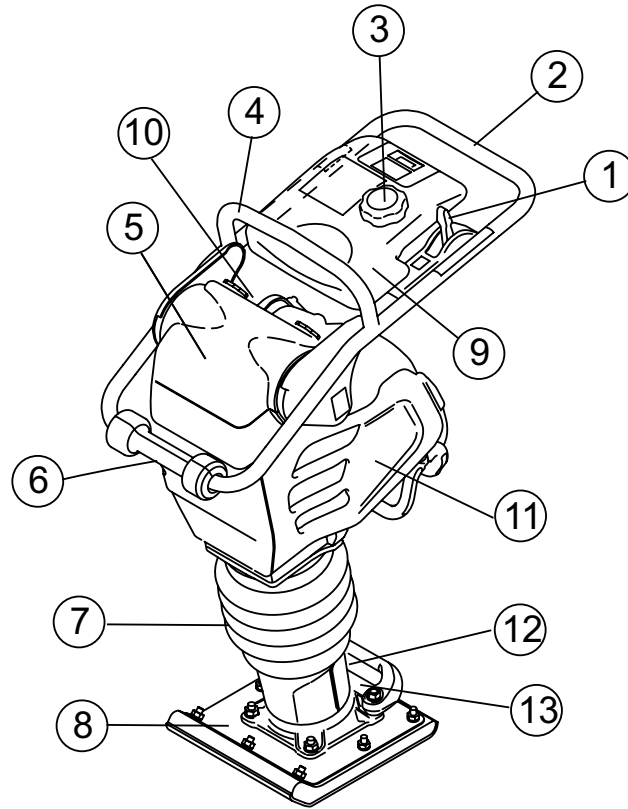
Before starting operation check the lifting handle to:

1. Make sure that there is no damage on the bolts.
2. Make sure that there is no crack or breakage on handle.
3. Make sure that there is no fissure on the surface. If there is any abnormality or damage, replace with new one.

For operation:

This handle is to be used to lift up the shoe part of the machine with the body laid down on the ground or truck bed.

1. Use proper lifting techniques to avoid back injury. This handle is for manual lifting only.
2. Do not use this handle as a rammer lift point. Use the lifting point on the top of the machine.
3. Do not move the rammer with the lifting handle and the front rollers more than 16 feet (5 meters).



**Figure 1. MTX70HF Rammer**

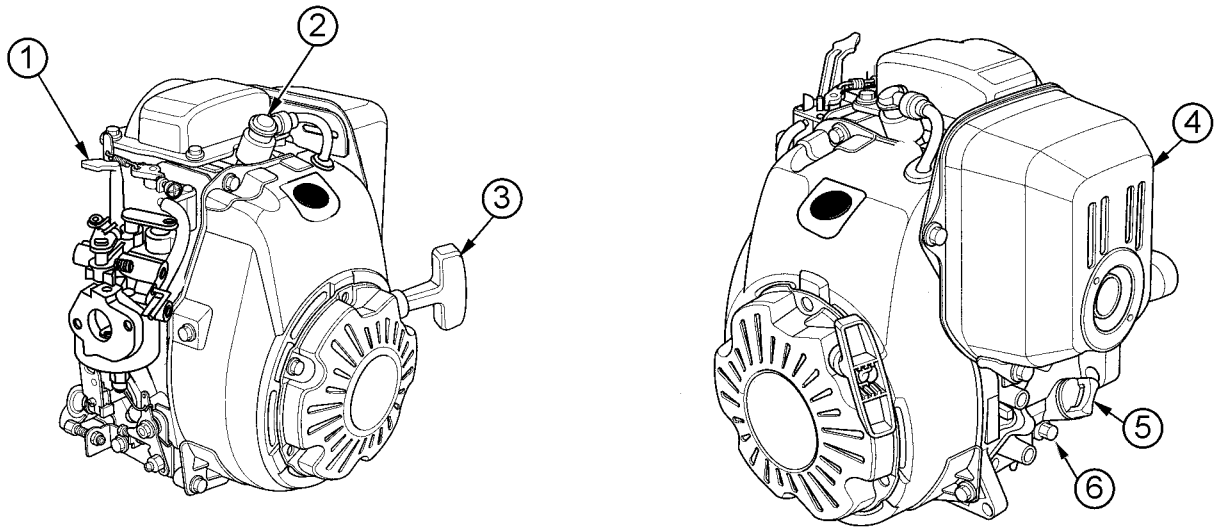
Figure 1 shows the location of the controls and components for the MTX70HF Tamping Rammer. The functions of each control is described below:

1. **Combination (Throttle) Lever** — Used to adjust engine speed (rpm). Move lever forward (**SLOW**) to reduce engine speed, move lever back toward operator (**FAST**) to increase speed. Always operate the rammer at full speed (rpm).
2. **Handle** — To operate rammer, **GRIP** handle assembly firmly on both sides.
3. **Fuel Tank Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. DO NOT over fill.
4. **Hook** — Used to lift rammer for transporting.
5. **Air Cleaner Cover** — Protects the air cleaner which prevents dirt and other debris from entering the engine.
6. **Roller** — Allows rammer to be moved around easily by rolling the unit.
7. **Bellows** — Reservoir for oil bath.
8. **Foot** — Laminated wood with tempered steel plate for superior shock absorption.
9. **Fuel Tank** — Holds the fuel for the unit (up to 2.1 quarts).
10. **Muffler** — reduces the noise of the engine when running.
11. **Engine** — this unit uses a Honda GX100UKRB5 gasoline engine.
12. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
13. **Drain Valve** — Open this valve to remove oil from the bellows.

## **WARNING**



Adding fuel to the tank should be accomplished only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, DO NOT attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.



**Figure 2. Honda GX100 Engine**

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the engine manufacturer's manual for detailed operation and service information.

1. **Choke Lever** — Normally used in starting the engine in cold weather conditions. In cold weather, turn the choke lever to the fully closed position. In warm weather, set the choke lever halfway or completely open.
2. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). Clean spark plug once a week.
3. **Recoil Starter (pull rope)** — Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

## NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

4. **Muffler** — Used to reduce noise and emissions.
5. **Dipstick/Oil Filler Cap** — Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 3.
6. **Oil Drain Plug** — Remove this plug to remove oil from the engine's crankcase.

## WARNING



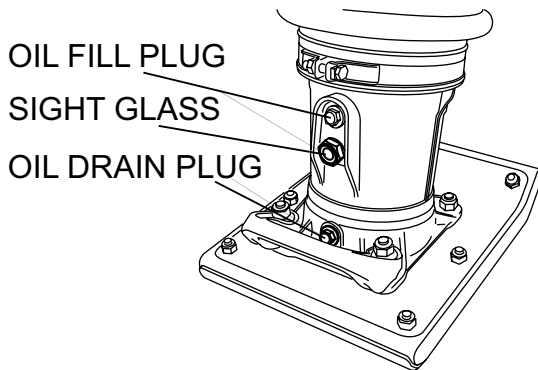
Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

## CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 3) at the rear of the tamper foot.



**Figure 3. Foot Housing Sight Glass**

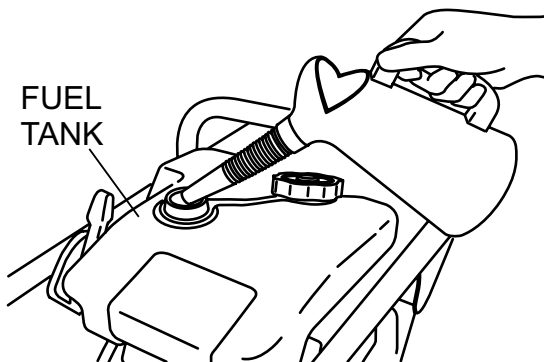
### NOTICE

The oil level should be kept at the half way point of the sight glass.

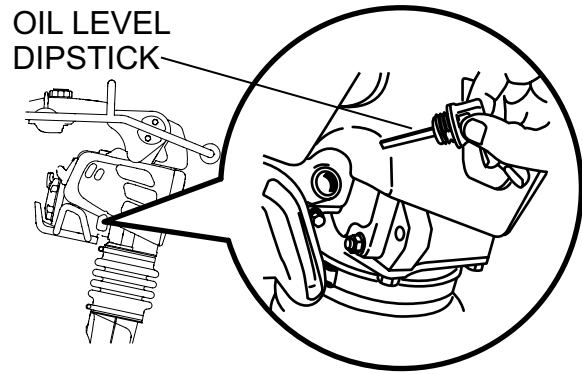
2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 3). The bath contains approximately 1.7 pints (820 cc.)

## ENGINE

1. Fill the fuel tank (Figure 4) with unleaded gasoline. At the same time, check the engine oil and make it a habit to replenish it often (Figure 5).



**Figure 4. Fuel Tank**



**Figure 5. Engine Oil Dipstick**

2. Low levels of oil may result in engine seizure due to high levels of consumption during operation.
3. Check the engine oil level and if the engine oil level is low, it should be refilled. Use the proper motor oil as suggested in the Table 3 below.

**Table 3. Motor Oil Grade**

| Season or Temperature                         | Grade of motor oil<br>(higher than MS class) |
|---|--|
| Spring, Summer or Autumn<br>+120° F to +15° F | SAE 30                                       |
| Winter<br>+40° F to +15° F                    | SAE 30                                       |
| Below +15° F                                  | SAE 10W-30                                   |

## GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.
4. Adjust height of handle. Adjust handle by loosening nuts and moving handle to suit operation. Retighten nuts.

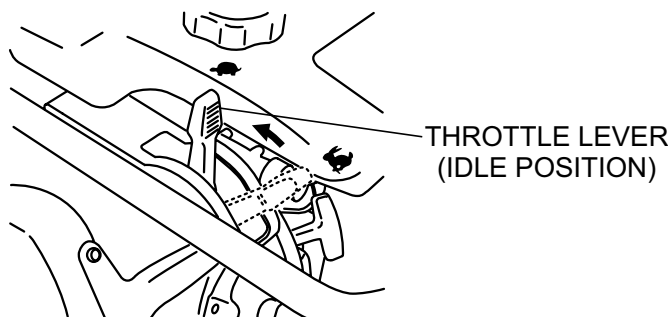
## **CAUTION**

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

### INITIAL STARTUP

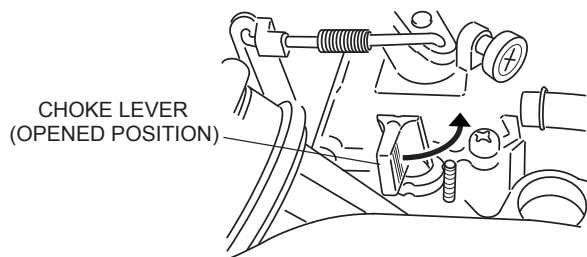
When starting the MTX70HF Tamping Rammer perform the following:

1. Slide the throttle lever from the stop to the idle position (🚗) (Figure 6). This opens the fuel cock and the engine electrical circuit is turned on automatically.



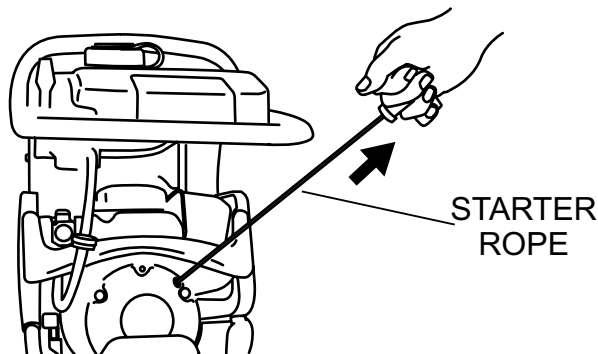
**Figure 6. Throttle Lever (Idle Position)**

2. Place the choke lever to the closed position. When the weather is cold, close the choke all the way. When it is hot, or if the engine is hot, open the choke a little or leave it fully open (Figure 7).



**Figure 7. Choke Lever**

3. Grip the starter rope handle (Figure 8) and pull it until you feel a slight resistance. Then pull sharply and quickly. Return the handle to the starter case before releasing.



**Figure 8. Recoil Starter**

4. If engine fails to start, move the choke lever (Figure 7) to the half open position to avoid flooding.
5. Repeat steps 1 thru 4.
6. If the engine does not start after repeated attempts, do the following:
  - a. Check fuel delivery from fuel tank to carburetor.
  - b. Check for restrictions to fuel flow at in-tank filter.
  - c. Check for restrictions to fuel flow at in-line filter.
  - d. Inspect spark plug for contamination and proper gap. Clean, adjust or replace spark plug as required.

## OPERATION

1. To start the rammer tamping action, move the throttle lever (Figure 9) **quickly** from **IDLE** to the **START** (🔌) position. **DO NOT** move the throttle lever slowly as this may cause damage to the clutch or spring.

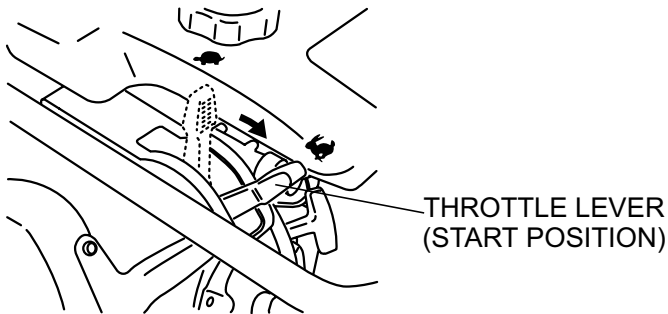


Figure 9. Throttle Lever (Start Position)

### ⚠ CAUTION

Make sure that the throttle lever is moved to the **FULL START** position. Operating the rammer at less than full speed can result in damage to the clutch springs or foot.

2. The MTX70HF tamping rammer is designed to run at 3,800 to 4,100 rpm. At optimum rpm the foot hits at the rate between 590 - 695 impacts per minute. Increasing throttle speed past factory set rpm does not increase impacts and may damage unit. The MTX70HF is designed to advance while tamping. For faster advance, pull back slightly on the handle so that rear of foot contacts soil first.
3. To stop the tamping action, move throttle lever quickly from **START** to **IDLE** position (Figure 6).

## STOPPING THE ENGINE

1. Move throttle lever quickly from the **START** to **IDLE** position (Figure 6) and run the engine for three minutes at low speed. After the engine **cools**, move the throttle lever to the **STOP** position (Figure 10). The engine will stop and the fuel cock is automatically closed.

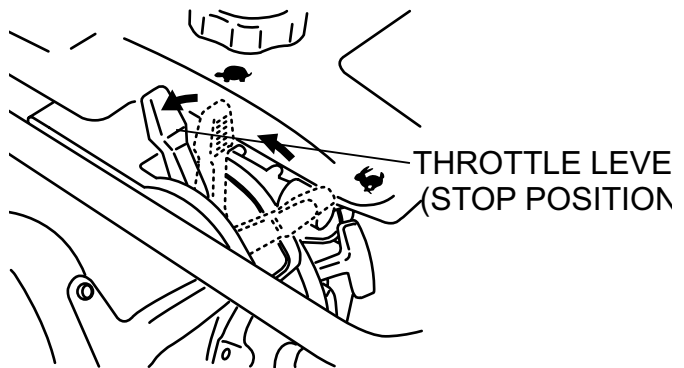


Figure 10. Throttle Lever (Stop Position)

2. If the engine does not stop due to a problem with the switch or the like, move the machine to a safe location and hold the throttle lever in the stop position. Let the machine run on idle and the machine will stop after a few minutes.



Perform the scheduled maintenance procedures as indicated:

## DAILY

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.
- Check the spring box and bellows for oil leaks. Repair or replace as needed.

## EVERY 50 HOURS

- Remove the fuel filter cap and clean the inside of the fuel tank (Figure 11).

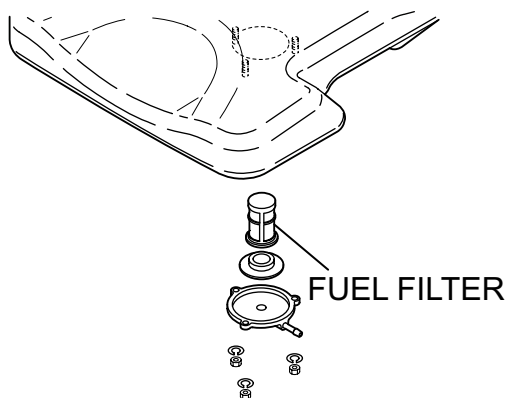


Figure 11. Fuel Filter

- Remove and clean the spark plug, then adjust the spark gap to 0.024~0.028 inch (0.6~0.7 mm).

## EVERY 80 TO 100 HOURS

- Remove the air cleaner cover. Loosen and remove the 2 screws that hold the cover to the air cleaner assembly. If the primary element (Figure 12) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE10W-30) and wring the element so that 25 to 30 cc of engine oil remains on the element.

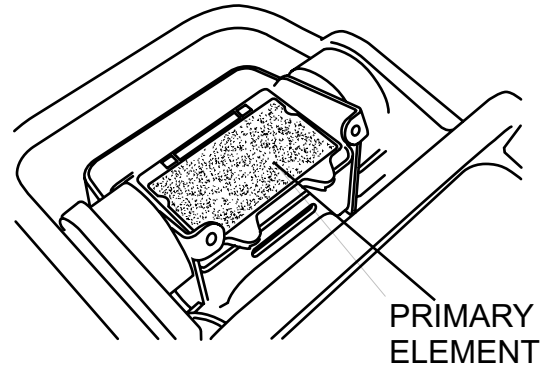


Figure 12. Air Cleaner Primary Element

## EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 13) and drain the oil. Refill with approximately 1.7 pint (800 cc) of 10W-30 SE, SF or higher grade motor oil. Oil should be midway in sight glass. Break in oil should be changed after first 50 hours.

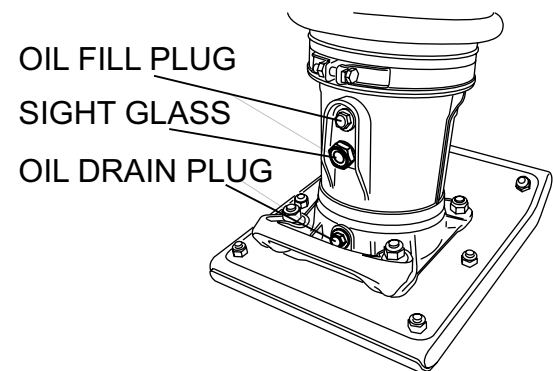


Figure 13. Oil Drain Plug

## EVERY 2 YEARS

- Replace the fuel line every 2 years even if there is no visible damage.

## LONG TERM STORAGE

- Slide the throttle lever to the **STOP** position.
- Drain any fuel including in the fuel hose.
- Replace lubrication oil and apply grease to lubrication points.
- Cover the air intake on the air cleaner and the exhaust outlet on the muffler.
- Store unit indoors covered with plastic sheet in moisture free and dust free location out of direct sunlight.

# TROUBLESHOOTING

| Troubleshooting (Engine)   |   |   |
|--|---|---|
| Symptom  | Possible Problem  | Solution  |
| Difficult to start, fuel is available, but no spark at spark plug.                 | Spark plug bridging?  | Check gap, insulation or replace spark plug.  |
|  | Carbon deposit on spark plug?                                 | Clean or replace spark plug.  |
|  | Short circuit due to deficient spark plug insulation?         | Check spark plug insulation, replace if worn.   |
|  | Improper spark plug gap?                                      | Set to proper gap.  |
|  | Fuel reaching carburetor?                                     | Check fuel line.  |
|  | Water in fuel tank?   | Flush or replace fuel tank.   |
|  | Fuel filter clogged?  | Replace fuel filter.  |
|  | Stuck carburetor?   | Check float mechanism.  |
|  | Spark plug is red?  | Check transistor ignition unit.   |
|  | Spark plug is bluish white?                                   | If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.                           |
|  | No spark present at tip of spark plug?                        | Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace. |
|  | No oil?   | Add oil as required.  |
|  | Oil pressure alarm lamp blinks upon starting? (if applicable) | Check automatic shutdown circuit, "oil sensor". (if applicable)   |
| Difficult to start, fuel is available, and spark is present at the spark plug.     | ON/OFF switch is shorted?                                     | Check switch wiring, replace switch.  |
|  | Ignition coil defective?                                      | Replace ignition coil.  |
|  | Improper spark gap, points dirty?                             | Set correct spark gap and clean points.   |
|  | Condenser insulation worn or short circuiting?                | Replace condenser.  |
|  | Spark plug wire broken or short circuiting?                   | Replace defective spark plug wiring.  |
| Difficult to start, fuel is available, spark is present and compression is normal. | Wrong fuel type?  | Flush fuel system, and replace with correct type of fuel.   |
|  | Water or dust in fuel system?                                 | Flush fuel system.  |
|  | Air cleaner dirty?  | Clean or replace air cleaner.   |
|  | Choke open?   | Close choke.  |
| Difficult to start, fuel is available, spark is present and compression is low.    | Suction/exhaust valve stuck or protruded?                     | Reseat valves.  |
|  | Piston ring and/or cylinder worn?                             | Replace piston rings and/or piston.   |
|  | Cylinder head and/or spark plug not tightened properly?       | Torque cylinder head bolts and spark plug.  |
|  | Head gasket and/or spark plug gasket damaged?                 | Replace head and spark plug gaskets.  |
| No fuel present at carburetor.   | No fuel in fuel tank?   | Fill with correct type of fuel.   |
|  | Fuel cock does not open properly?                             | Apply lubricant to loosen fuel cock lever, replace if necessary.  |
|  | Fuel filter/lines clogged?                                    | Replace fuel filter.  |
|  | Fuel tank cap breather hole clogged?                          | Clean or replace fuel tank cap.   |
|  | Air in fuel line?   | Bleed fuel line.  |

# TROUBLESHOOTING

| Troubleshooting (Engine) - continued                       |   |   |
|--|---|---|
| Symptom  | Possible Problem                                  | Solution  |
| Weak in power, compression is proper and does not misfire. | Air cleaner dirty?                                | Clean or replace air cleaner.   |
|  | Improper level in carburetor?                     | Check float adjustment, rebuild carburetor.                                 |
|  | Defective spark plug?                             | Clean or replace spark plug.  |
|  | Improper spark plug?                              | Set to proper gap.  |
| Weak in power, compression is proper but misfires.         | Water in fuel system?                             | Flush fuel system and replace with correct type of fuel.                    |
|  | Dirty spark plug?                                 | Clean or replace spark plug.  |
|  | Ignition coil defective?                          | Replace ignition coil.  |
| Engine overheats.  | Spark plug heat value incorrect?                  | Replace with correct type of spark plug.                                    |
|  | Wrong type of fuel?                               | Replace with correct type of fuel.  |
|  | Cooling fins dirty?                               | Clean cooling fins.   |
|  | Intake air restricted?                            | Clear intake of dirt and debris. Replace air cleaner elements as necessary. |
|  | Oil level too low or too high?                    | Adjust oil to proper level.   |
| Rotational speed fluctuates.                               | Governor adjusted incorrectly?                    | Adjust governor.  |
|  | Governor spring defective?                        | Replace governor spring.  |
|  | Fuel flow restricted?                             | Check entire fuel system for leaks or clogs.                                |
| Recoil starter malfunctions. (if applicable)               | Recoil mechanism clogged with dust and dirt?      | Clean recoil assembly with soap and water.                                  |
|  | Spiral spring loose?                              | Replace spiral spring.  |
| Starter malfunctions.                                      | Loose, damaged wiring?                            | Ensure tight, clean connections on battery and starter.                     |
|  | Battery insufficiently charged?                   | Recharge or replace battery.  |
|  | Starter damaged or internally shorted?            | Replace starter.  |
| Burns too much fuel.                                       | Over-accumulation of exhaust products?            | Check and clean valves. Check muffler and replace if necessary.             |
|  | Wrong spark plug?                                 | Replace spark plug with manufacturer's suggested type.                      |
| Exhaust color is continuously "white".                     | Lubricating oil is wrong viscosity?               | Replace lubricating oil with correct viscosity.                             |
|  | Worn rings?                                       | Replace rings.  |
| Exhaust color is continuously "black".                     | Air cleaner clogged?                              | Clean or replace air cleaner.   |
|  | Choke valve set to incorrect position?            | Adjust choke valve to correct position.                                     |
|  | Carburetor defective, seal on carburetor broken?  | Replace carburetor or seal.   |
|  | Poor carburetor adjustment, engine runs too rich? | Adjust carburetor.  |
| Will not start, no power with key "ON". (if applicable)    | ON/OFF device not activated ON?                   | Turn on ON/OFF device.  |
|  | Battery disconnected or discharged?               | Check cable connections. Charge or replace battery.                         |
|  | Ignition switch/wiring defective?                 | Replace ignition switch. Check wiring.                                      |

## TROUBLESHOOTING

| Troubleshooting (Rammer)                                |   |   |
|---|---|---|
| Symptom   | Possible Problem                                      | Solution  |
| Engine runs but rammer jumps erratically or not at all. | Operating speed of throttle lever is incorrectly set? | Set throttle lever to correct position.               |
|   | Oil in excess?  | Drain excess oil. Bring to correct level.             |
|   | Clutch slips?   | Replace or adjust clutch.                             |
|   | Spring Failure?                                       | Replace spiral spring.                                |
|   | Speed of engine improper?                             | Adjust engine speed to correct operating RPM setting. |
|   | Soil over-compacted?                                  | Shut down machine and test soil.                      |

[illegible]

## EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

### NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

### SAMPLE PARTS LIST

| NO. | PART NO. | PART NAME            | QTY. | REMARKS             |
|-----|----------|----------------------|------|---------------------|
| 1   | 12345    | BOLT .....           | 1    | INCLUDES ITEMS W/%  |
| 2%  |          | WASHER, 1/4 IN. .... |      | NOT SOLD SEPARATELY |
| 2%  | 12347    | WASHER, 3/8 IN. ...  | 1    | MQ-45T ONLY         |
| 3   | 12348    | HOSE .....           |      | A/R ...MAKE LOCALLY |
| 4   | 12349    | BEARING .....        | 1    | S/N 2345B AND ABOVE |

### NO. Column

**Unique Symbols** — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

**Duplicate Item Numbers** — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

### NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

### PART NO. Column

**Numbers Used** — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

### QTY. Column

**Numbers Used** — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

### REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

**Assembly/Kit** — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

**Serial Number Break** — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

**Specific Model Number Use** — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

“XXXXX ONLY”

“NOT USED ON XXXX”

**“Make/Obtain Locally”** — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

**“Not Sold Separately”** — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

## SUGGESTED SPARE PARTS

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### MTX70HF RAMMER WITH HONDA GX100UKRB5 ENGINE

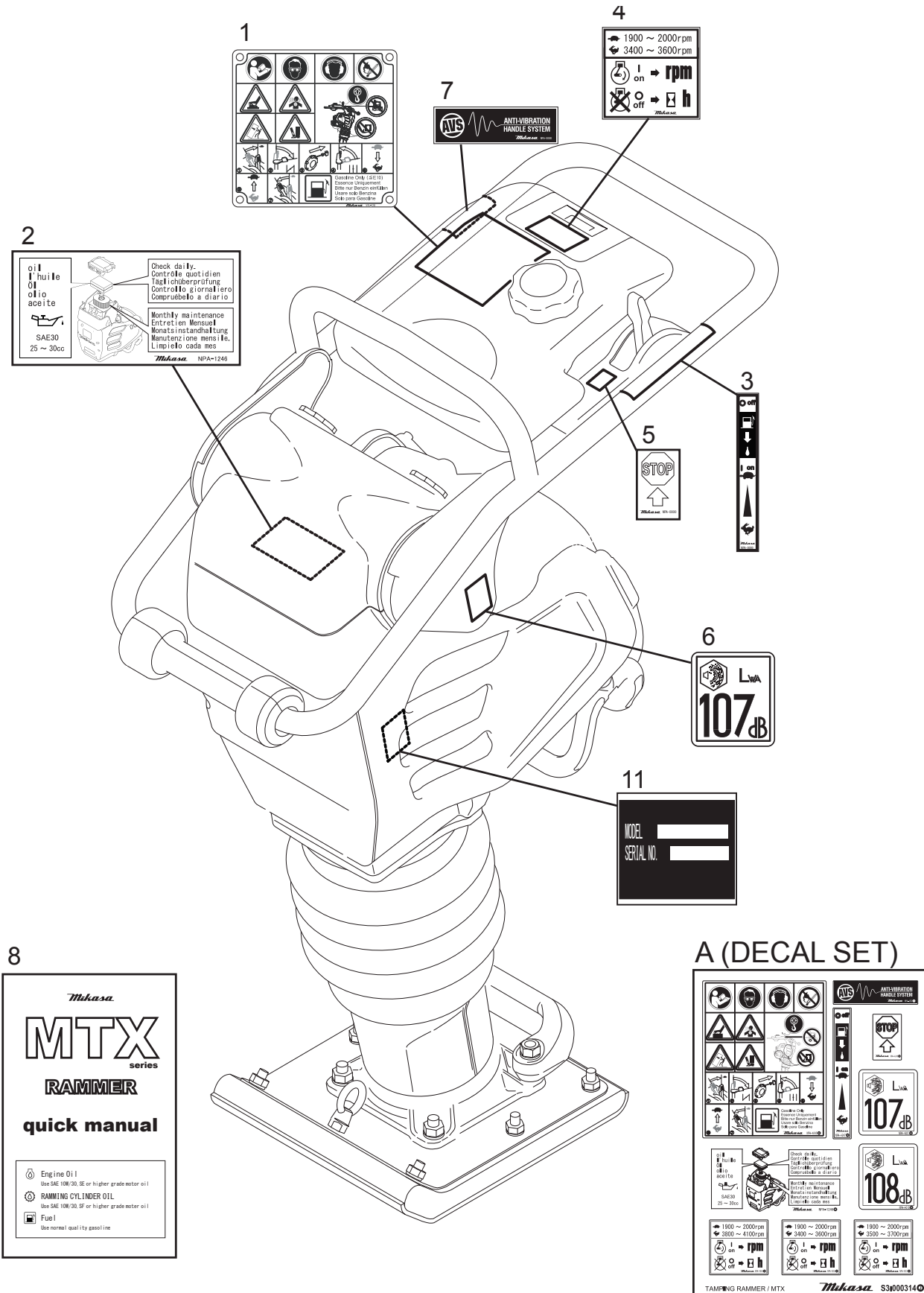
#### 1 TO 3 UNITS

| Qty.   | P/N              | Description                     |
|--------|------------------|---------------------------------|
| 1..... | 956100062.....   | THROTTLE WIRE                   |
| 3..... | 366010070.....   | PRIMARY ELEMENT, AIR CLEANER    |
| 3..... | 366010080.....   | SECONDARY ELEMENT, AIR CLEANER1 |
| 1..... | 366350010.....   | CAP ASSY., FUEL TANK            |
| 3..... | 9805655777.....  | SPARK PLUG                      |
| 1..... | 954406010.....   | STRAINER, FUEL TANK             |
| 1..... | 28462Z0DV03..... | ROPE, RECOIL STARTER            |

#### NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

# NAMEPLATES AND DECALS

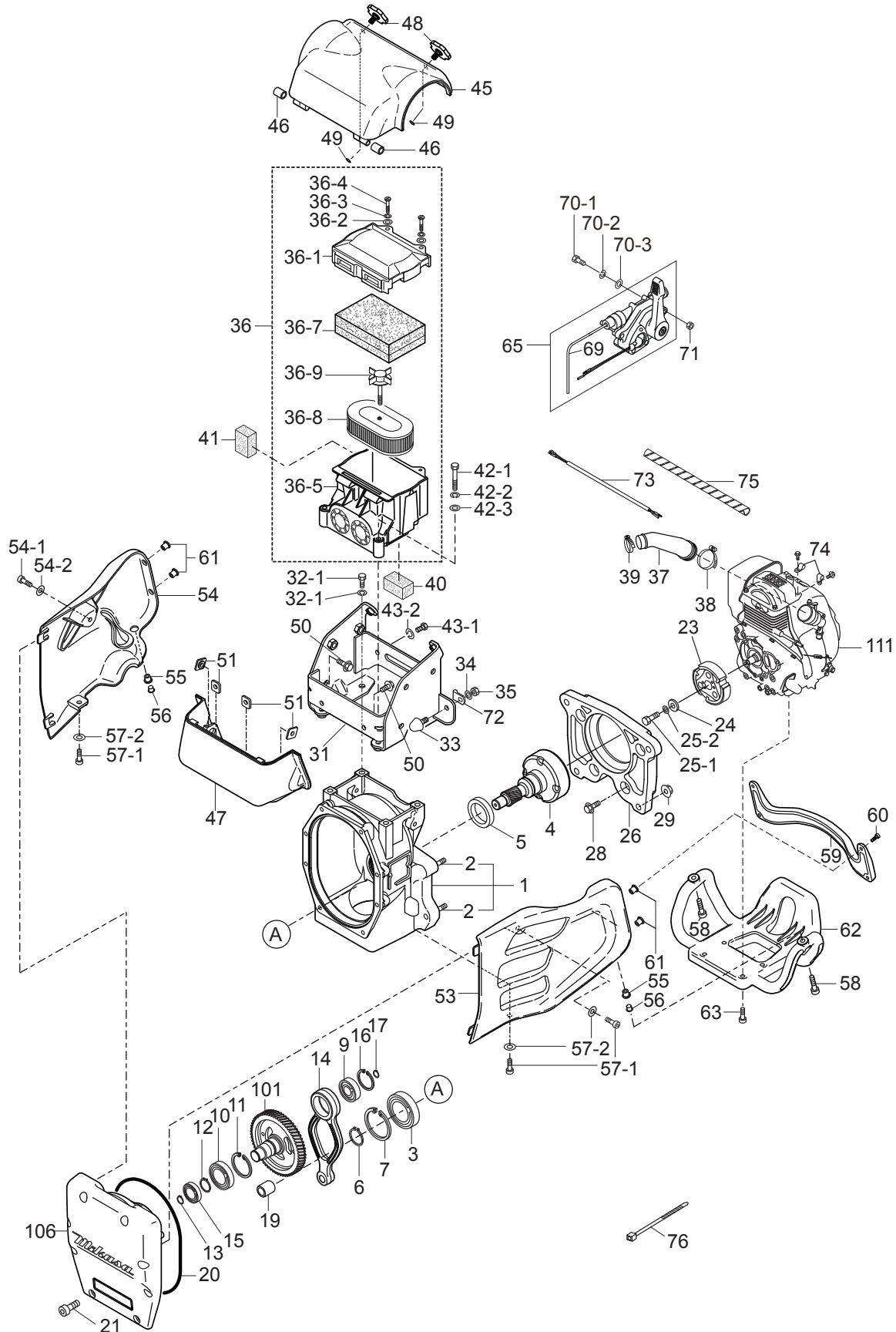




## NAMEPLATES AND DECALS

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>        | <u>QTY.</u> | <u>REMARKS</u>                         |
|------------|-----------------|-------------------------|-------------|--|
| A          | 920900040       | DECAL SET .....         | 1.....      | INCLUDES ITEMS W/#                     |
| 1          | 920212910       | DECAL: OPERATION        | 1           |  |
| 2#         |                 | DECAL: AIR CLEANER      | 1           |  |
| 3#         |                 | DECAL: LEVER OPERATION  | 1           |  |
| 4#         |                 | DECAL: MAX SPEED        | 1           |  |
| 5#         |                 | DECAL: MACHINE STOP     | 1           |  |
| 6#         |                 | DECAL: EC NOISE REQ     | 1           |  |
| 7#         |                 | DECAL: ANTI-VIB HANDLE  | 1           |  |
| 8          | 920212540       | QUICK MANUAL            | 1           |  |
| 11         |                 | DECAL: NAMEPLATE .....  | 1.....      | CONTACT MQ PARTS DEPT W/<br>SERIAL NO. |
| 12         | 920214100       | DECAL: E/G FIRE WARNING | 1           |  |

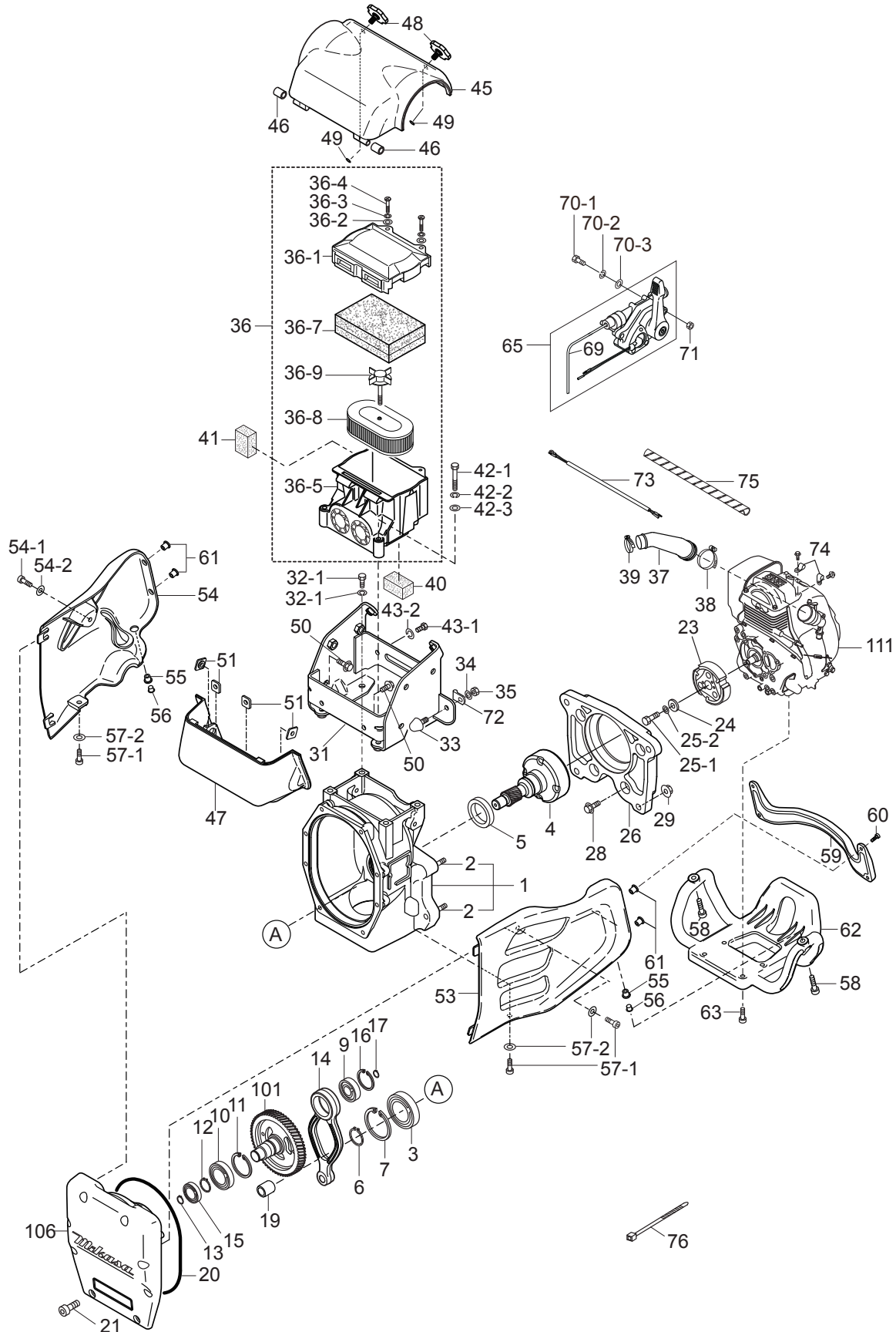
# CRANKCASE AND ENGINE ASSY



## CRANKCASE AND ENGINE ASSY

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>        | <u>QTY.</u> | <u>REMARKS</u>       |
|------------|-----------------|-------------------------|-------------|----------------------|
| 1          | 366910010       | CRANKCASE .....         | 1           | INCLUDES ITEMS W/ \$ |
| 2\$        | 009120204       | STUD BOLT 10 X 30       | 4           |                      |
| 3          | 041006007       | BEARING 6007Z           | 1           |                      |
| 4          | 366345170       | DRUM, PINION            | 1           |                      |
| 5          | 060404010       | OIL SEAL TC-40528       | 1           |                      |
| 6          | 080200350       | STOP RING S-35          | 1           |                      |
| 7          | 080100620       | STOP RING R-62          | 1           |                      |
| 9          | 040006207       | BEARING 6207            | 1           |                      |
| 10         | 040006305       | BEARING 6305            | 1           |                      |
| 11         | 080100720       | STOP RING R-72          | 1           |                      |
| 12         | 080200350       | STOP RING S-35          | 1           |                      |
| 13         | 080200250       | STOP RING S-25          | 1           |                      |
| 14         | 366345230       | CONNECTING ROD          | 1           |                      |
| 15         | 040006304       | BEARING 6304            | 1           |                      |
| 16         | 080100520       | STOP RING R-52          | 1           |                      |
| 17         | 080200200       | STOP RING S-20          | 1           |                      |
| 19         | 047940060       | NEEDLE BEARING FJ-1816  | 1           |                      |
| 20         | 050710080       | O-RING                  | 1           |                      |
| 21         | 001520825       | SOCKET HEAD BOLT 8X25 T | 8           |                      |
| 23         | 366348550       | CLUTCH ASSY             | 1           |                      |
| 24         | 952401450       | WASHER, 5X22X3          | 1           |                      |
| 25-1       | 001220825       | BOLT 8X25 T             | 1           |                      |
| 25-2       | 030208200       | WASHER, LOCK M8         | 1           |                      |
| 26         | 366217180       | FLANGE, ENGINE          | 1           |                      |
| 28         | 001710830       | FLANGE BOLT 8X30        | 4           |                      |
| 29         | 022611010       | FLANGE NUT M10          | 4           |                      |
| 31         | 366346280       | BRACKET, SHOCK ABSORBER | 1           |                      |
| 32-1       | 001221030       | BOLT 10X30              | 4           |                      |
| 32-2       | 030210250       | WASHER, LOCK M10        | 4           |                      |
| 33         | 939010270       | STOPPER RUBBER (70)     | 1           |                      |
| 34         | 030208200       | WASHER, LOCK M8         | 1           |                      |
| 35         | 020308060       | NUT M8                  | 1           |                      |
| 36         | 366900010       | CRANKCASE CP .....      | 1           | INCLUDES ITEMS W/ #  |
| 36-1#      | 366010010       | AIR CLEANER COVER CP    | 1           |                      |
| 36-2#      | 366010020       | WASHER, FLAT M6         | 2           |                      |
| 36-3#      | 030206150       | WASHER, LOCK M6         | 2           |                      |
| 36-4#      | 366010040       | COIN BOLT M6            | 2           |                      |
| 36-5#      | 366010050       | BASE CP, AIR CLEANER    | 1           |                      |
| 36-7#      | 366010070       | PRIMARY ELEMENT CP      | 1           |                      |
| 36-8#      | 366010080       | SECONDARY ELEMENT       | 1           |                      |
| 36-9#      | 362030040       | GRIP BELT CP            | 1           |                      |
| 37         | 366345470       | PIPE, INTAKE            | 1           |                      |
| 38         | 954407681       | CYCLONE CLAMP (CY-1) 45 | 1           |                      |
| 39         | 954407682       | CYCLONE CLAMP (CY-1) 38 | 1           |                      |
| 40         | 366460160       | SEALING FORM, UNDER     | 1           |                      |
| 41         | 366460150       | SEALING FORM, SIDE      | 1           |                      |

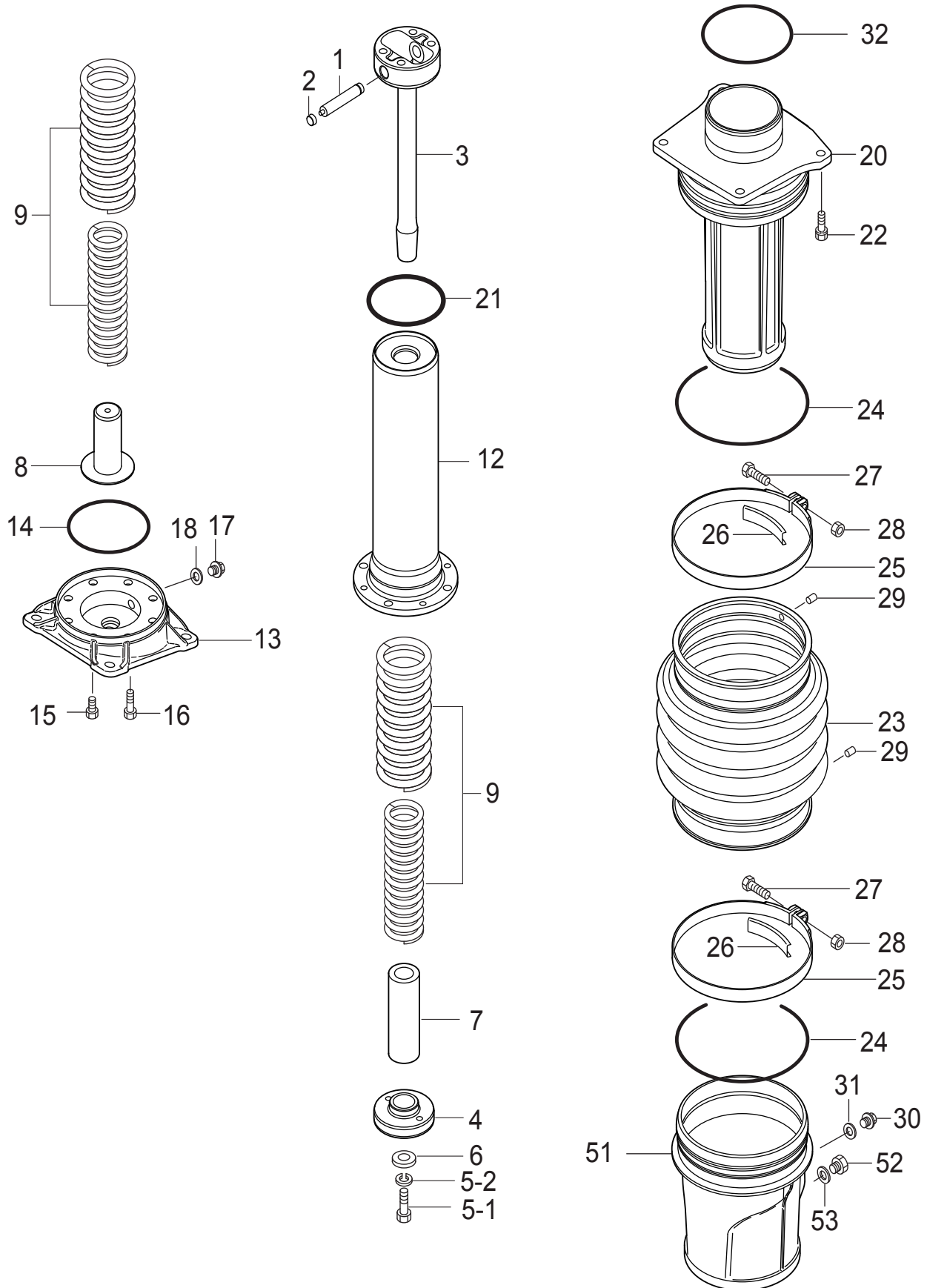
# CRANKCASE AND ENGINE ASSY



## CRANKCASE AND ENGINE ASSY

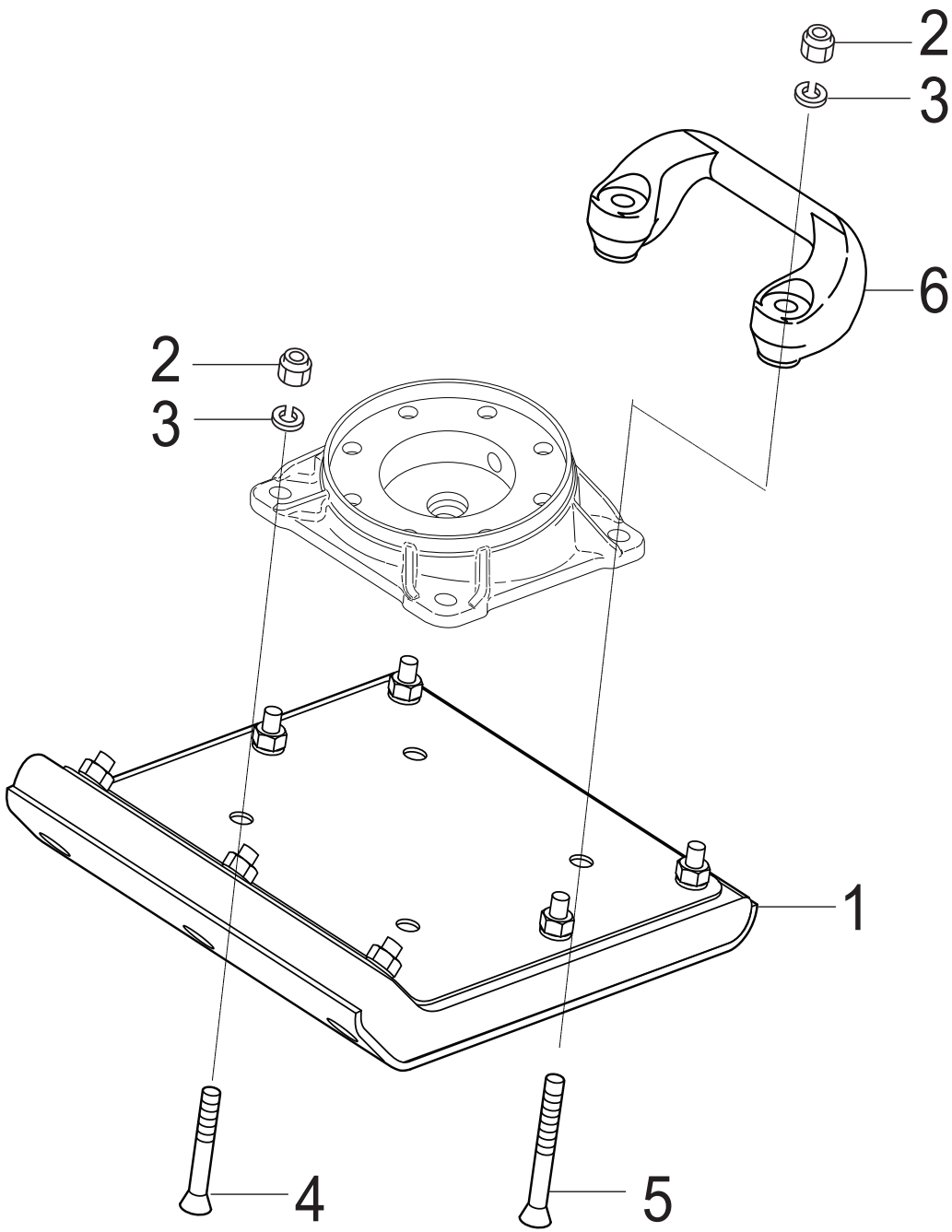
| <b>NO.</b> | <b>PART NO.</b> | <b>PART NAME</b>                    | <b>QTY.</b> | <b>REMARKS</b>     |
|------------|-----------------|-------------------------------------|-------------|--------------------|
| 42-1       | 001220851       | BOLT 8X55 T                         | 2           |                    |
| 42-2       | 030208200       | WASHER, LOCK M8                     | 2           |                    |
| 42-3       | 031108160       | WASHER, FLAT M8                     | 2           |                    |
| 43-1       | 001210815       | BOLT 8X15                           | 2           |                    |
| 43-2       | 030208200       | WASHER, LOCK M8                     | 2           |                    |
| 45         | 366217340       | COVER, CLEANER(UPPER)               | 1           |                    |
| 46         | 366460140       | RUBBER BUSH 10X16X17                | 2           |                    |
| 47         | 366217350       | COVER, CLEANER (LOWER)              | 1           |                    |
| 48         | 366345980       | KNOB, CLEANER COVER                 | 2           |                    |
| 49         | 050200060       | O-RING P6                           | 2           |                    |
| 50         | 009110040       | FLANGE BOLT 8X20                    | 4           |                    |
| 51         | 959407670       | SQUARE NUT M8                       | 4           |                    |
| 53         | 366118893       | GUARD, LINK                         | 1           |                    |
| 54         | 366118903       | GUARD, MUFFLER                      | 1           |                    |
| 55         | 022910260       | WELL NUT, M8                        | 2           |                    |
| 56         | 366460170       | FLANGE COLLAR 8                     | 2           |                    |
| 57-1       | 001520820       | SOCKET HEAD BOLT 8X20 T             | 4           |                    |
| 57-2       | 033910220       | WASHER, FLAT M8                     | 4           |                    |
| 58         | 009110038       | SOCKET HEAD BOLT 8X30 ZN            | 2           |                    |
| 59         | 368217770       | EX BAR                              | 1           |                    |
| 60         | 009110039       | SOCKET HEAD BOLT 6X25 ZN            | 4           |                    |
| 61         | 022910250       | WELL NUT M6                         | 4           |                    |
| 62         | 366118913       | GUARD, ENGINE                       | 1           |                    |
| 63         | 009110038       | SOCKET HEAD BOLT 8X30 ZN            | 4           |                    |
| 64         | 033910220       | WASHER 8.4X15.5X1.6                 | 4           |                    |
| 65         | 356200100       | COMBINATION LEVER ASSY W/WIRE ..... | 1           | INCLUDES ITEMS W/@ |
| 69@        | 956100062       | THROTTLE WIRE                       | 1           |                    |
| 70-1       | 001220620       | BOLT 6X20T                          | 2           |                    |
| 70-2       | 030206150       | WASHER, LOCK M6                     | 2           |                    |
| 70-3       | 031106100       | WASHER, FLAT M6                     | 2           |                    |
| 71         | 020306050       | NUT M6                              | 2           |                    |
| 72         | 959006120       | CLIP (TCP2-10509B)                  | 1           |                    |
| 73         | 366460110       | WIRE HARNESS                        | 1           |                    |
| 74         | 2067550101      | CLAMP                               | 2           |                    |
| 75         | 959021814       | SPIRAL TUBE KEP6/L=500              | 1           |                    |
| 76         | 454010020       | CLAMP, TC-100                       | 3           |                    |
| 79         | 366461050       | COLLAR, GUARD                       | 8           |                    |
| 101        | 366345190       | CRANK GEAR                          | 1           |                    |
| 106        | 366010111       | FRONT COVER                         | 1           |                    |
| 111        | 912210017       | ENGINE ASSY, GX100UKRB5             | 1           |                    |

# GUIDE CYLINDER ASSY



## GUIDE CYLINDER ASSY

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>         | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|--------------------------|-------------|----------------|
| 1          | 366460100       | PISTON PIN               | 1           |                |
| 2          | 366459910       | PLUG, PISTON PIN         | 2           |                |
| 3          | 366346000       | PISTON ROD               | 1           |                |
| 4          | 371459690       | PISTON END               | 1           |                |
| 5-1        | 001121230       | BOLT 12X30 T             | 1           |                |
| 5-2        | 030212300       | WASHER, LOCK M12         | 1           |                |
| 6          | 952404790       | WASHER 13306             | 1           |                |
| 7          | 355447260       | STOPPER, LOWER           | 1           |                |
| 8          | 366459900       | STOPPER, BOTTOM          | 1           |                |
| 9          | 366459730       | MAIN SPRING              | 2           |                |
| 12         | 366345990       | SPRING CYLINDER          | 1           |                |
| 13         | 366217210       | FOOT PLATE 12            | 1           |                |
| 14         | 050100900       | O-RING G-90              | 1           |                |
| 15         | 001521020       | SOCKET HEAD BOLT 10X20 T | 4           |                |
| 16         | 001521040       | SOCKET HEAD BOLT 10X40 T | 4           |                |
| 17         | 953405270       | PLUG 1/4X14 13L          | 1           |                |
| 18         | 953405260       | PACKING 1/4 (CU)         | 1           |                |
| 20         | 366217440       | GUIDE CYLINDER           | 1           |                |
| 21         | 050710070       | O-RING AS568-344         | 1           |                |
| 22         | 002211035       | BOLT 10X35 H, SW         | 4           |                |
| 23         | 354010010       | BELLOWS, ORANGE          | 1           |                |
| 24         | 050931500       | O-RING JAS03150          | 2           |                |
| 25         | 354336352       | BELLOWS CLAMP(1.6T)171 D | 2           |                |
| 26         | 354442340       | BAND GUIDE, BELLOWS      | 2           |                |
| 27         | 001220840       | BOLT 8X40 T              | 2           |                |
| 28         | 020308060       | NUT M8                   | 2           |                |
| 29         | 354446170       | PIN 6D-8.5L              | 2           |                |
| 30         | 953405270       | PLUG 1/4X14 13L          | 1           |                |
| 31         | 953405260       | PACKING 1/4 (CU)         | 1           |                |
| 32         | 050200950       | O-RING P-95              | 1           |                |
| 51         | 366118590       | PROTECTION SLEEVE        | 1           |                |
| 52         | 366460300       | OIL GAUGE ASSY           | 1           |                |
| 53         | 953404670       | COPPER PACKING 17X25.5X1 | 1           |                |





## FOOT ASSY

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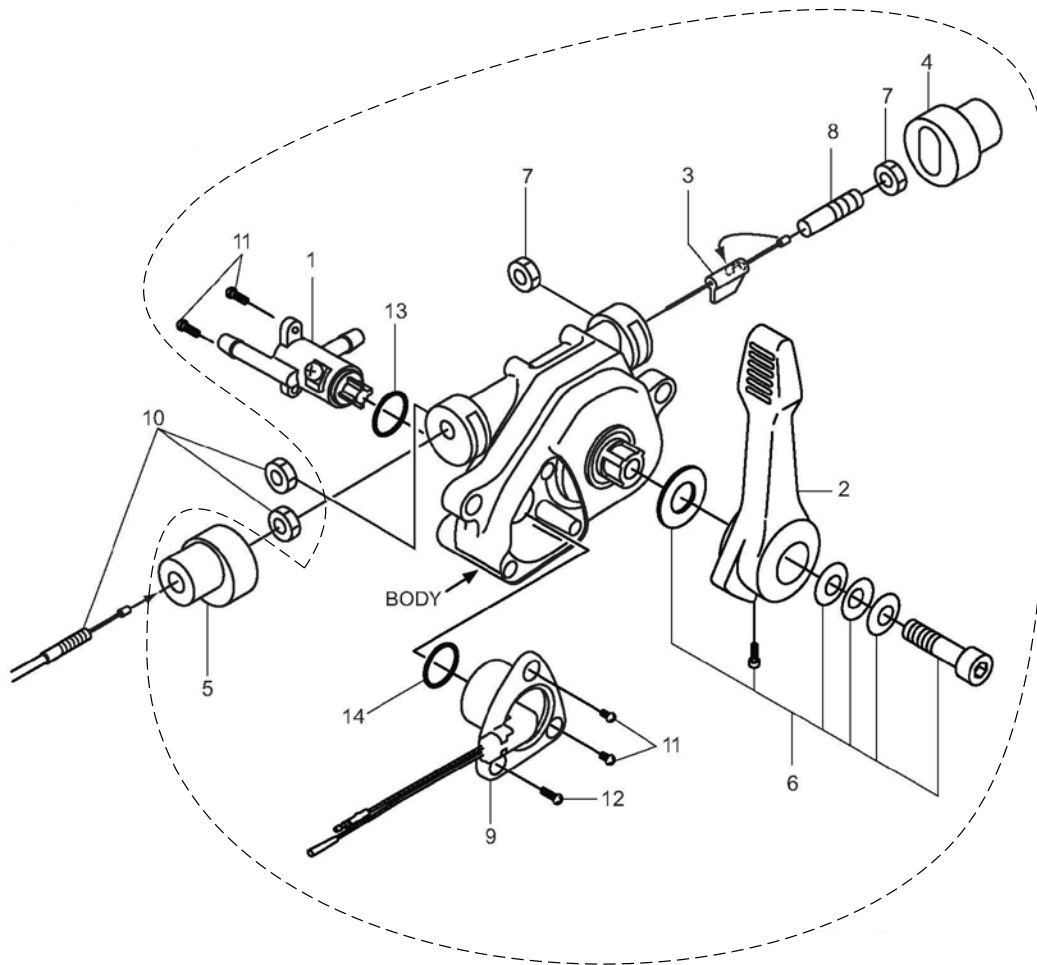
| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>        | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|-------------------------|-------------|----------------|
| 1          | 8511S           | FOOT ASSY 285           | 1           |                |
| 2          | 0211121409      | NYLON NUT M12           | 4           |                |
| 3          | 030212300       | WASHER, LOCK M12        | 4           |                |
| 4          | 009110034       | BOLT, SQUARE NECK 12X65 | 2           |                |
| 5          | 009110035       | BOLT, SQUARE NECK 12X95 | 2           |                |
| 6          | 363343390       | GRIP HANDLEBAR          | 1           |                |

[illegible]

## FUEL TANK AND HANDLE ASSY

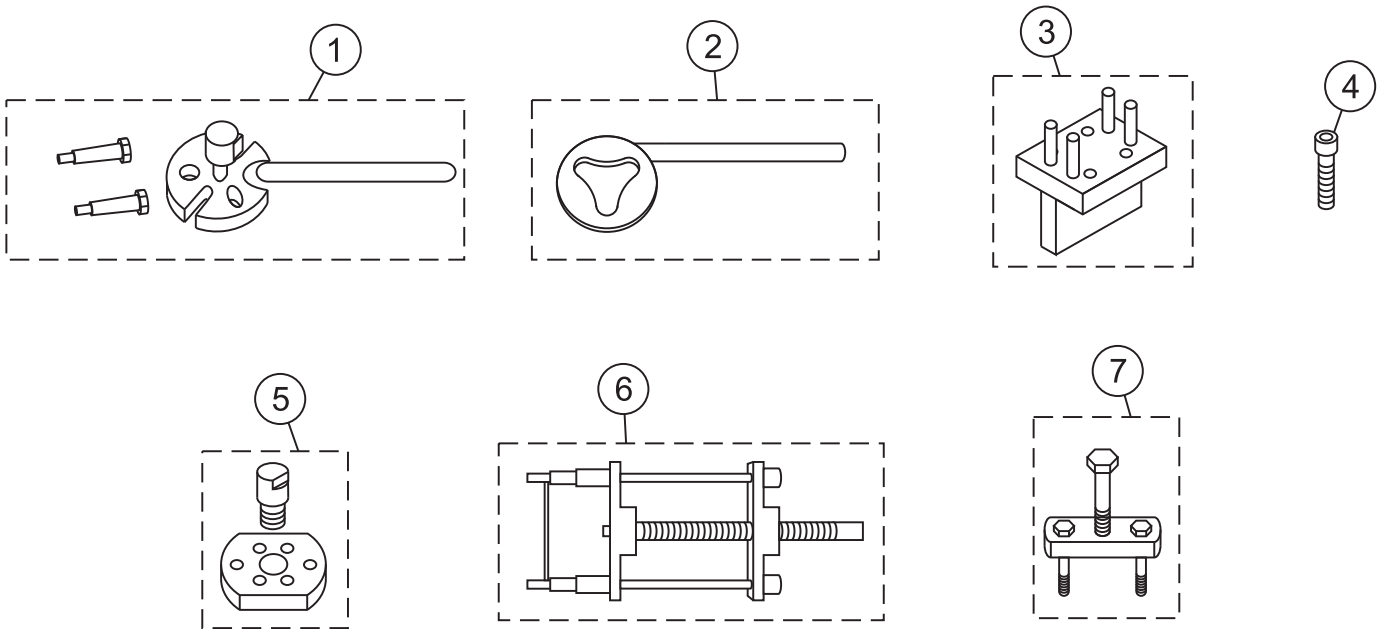
| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>           | <u>QTY.</u> | <u>REMARKS</u>      |
|------------|-----------------|----------------------------|-------------|---------------------|
| 1          | 366346270       | SHOCK ABSORBER W/PIN       | 2           |                     |
| 2-1        | 001521020       | SOCKET HEAD BOLT 10 X 20 T | 4           |                     |
| 2-2        | 033121009       | TOOTHED LOCK WASHER B M10  | 4           |                     |
| 3          | 368119570       | HANDLE                     | 1           |                     |
| 4-1        | 001211020       | BOLT 10 X 20 H             | 4           |                     |
| 4-2        | 030210250       | WASHER, LOCK M10           | 4           |                     |
| 5          | 939010270       | STOPPER RUBBER (70)        | 1           |                     |
| 6          | 030208200       | WASHER, LOCK M8            | 1           |                     |
| 7          | 020308060       | NUT M8                     | 1           |                     |
| 8*         | 366010060       | STRAP, FUEL TANK CAP       | 1           |                     |
| 9          | 366350010       | CAP ASSY., FUEL TANK ..... | 1           | INCLUDES ITEMS W/ * |
| 10         | 366118703       | FUEL TANK/MTX70            | 1           |                     |
| 11-1       | 011008015       | BOLT 8X15 H                | 3           |                     |
| 11-2       | 030208200       | WASHER, LOCK M8            | 3           |                     |
| 12         | 952401450       | WASHER 8.5 X 22 X 3        | 2           |                     |
| 13         | 031108160       | WASHER FLAT M8             | 1           |                     |
| 14         | 954406010       | STRAINER #110              | 1           |                     |
| 15         | 366459790       | PACKING, FUEL TANK         | 1           |                     |
| 16         | 366345280       | HOLDER, FILTER             | 1           |                     |
| 17         | 020305040       | NUT M5                     | 3           |                     |
| 18         | 030205130       | WASHER, LOCK M5            | 3           |                     |
| 19         | 959328401       | FUEL HOSE L=70             | 1           |                     |
| 20         | 0561080020      | HOSE BAND                  | 2           |                     |
| 22         | 009110037       | TAPPING SCREW 5 X 20       | 2           |                     |
| 40         | 366910030       | ROLLER ASSY W/ SCREW ..... | 1           | INCLUDES ITEMS W/ # |
| 41#        | 366217170       | ROLLER                     | 2           |                     |
| 42#        | 091005020       | SCREW 5 X 20               | 4           |                     |
| 43#        | 022610505       | FLANGE NUT M5 H            | 4           |                     |
| 51         | 955010311       | TP22 TACHO/HOUR METER      | 1           |                     |
| 53         | 980010400       | CURL CORD 850L             | 1           |                     |
| 54         | 366345620       | FINISHER, METER            | 1           |                     |
| 55         | 454010020       | CLAMP TC100                | 5           |                     |
| 56         | 954010270       | CLIP AB-3N                 | 1           |                     |
| 101        | H950024085008   | HOSE BAND 2                | 1           |                     |
| 102        | H950024085008   | HOSE BAND 5-5-2            | 1           |                     |
| 103        | 91434Z4EW51     | FUEL HOSE 350              | 1           |                     |
| 201        | 920212910       | OPERATION DECAL            | 1           |                     |
| 202        | 094010053       | PAN HEAD SCREW 4 X 8       | 4           |                     |

## COMBINATION LEVER ASSY



## COMBINATION LEVER ASSY

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>             | <u>QTY.</u> | <u>REMARKS</u>     |
|------------|-----------------|------------------------------|-------------|--------------------|
| A          | 956200110       | COMB. LEVER.....             | 1.....      | INCLUDES ITEMS W/@ |
| 1@         | 366349430       | FUEL COCK                    | 1           |                    |
| 2@         | 366010310       | LEVER                        | 1           |                    |
| 3@         | 366010190       | SLIDER                       | 1           |                    |
| 4@         | 366010200       | END CAP                      | 1           |                    |
| 5@         | 366010210       | WIRE CAP                     | 1           |                    |
| 6@         | 366010220       | BOLT AND WASHER SET          | 1           |                    |
| 7@         | 020408050       | NUT M8, H=5                  | 2           |                    |
| 8@         | 959407650       | SOCKET HEAD SCREW W/ TH.WIRE | 1           |                    |
| 9@         | 366010320       | STOP SWITCH                  | 1           |                    |
| 10         | 956100062       | THROTTLE WIRE                | 1           |                    |
| 11@        | 094010051       | TAPPING SCREW B1 4X12        | 4           |                    |
| 12@        | 094010052       | TAPPING SCREW B1 4X30        | 1           |                    |
| 13@        | 050200150       | O-RING, P15                  | 1           |                    |
| 14@        | 050200110       | O-RING, P11                  | 1           |                    |

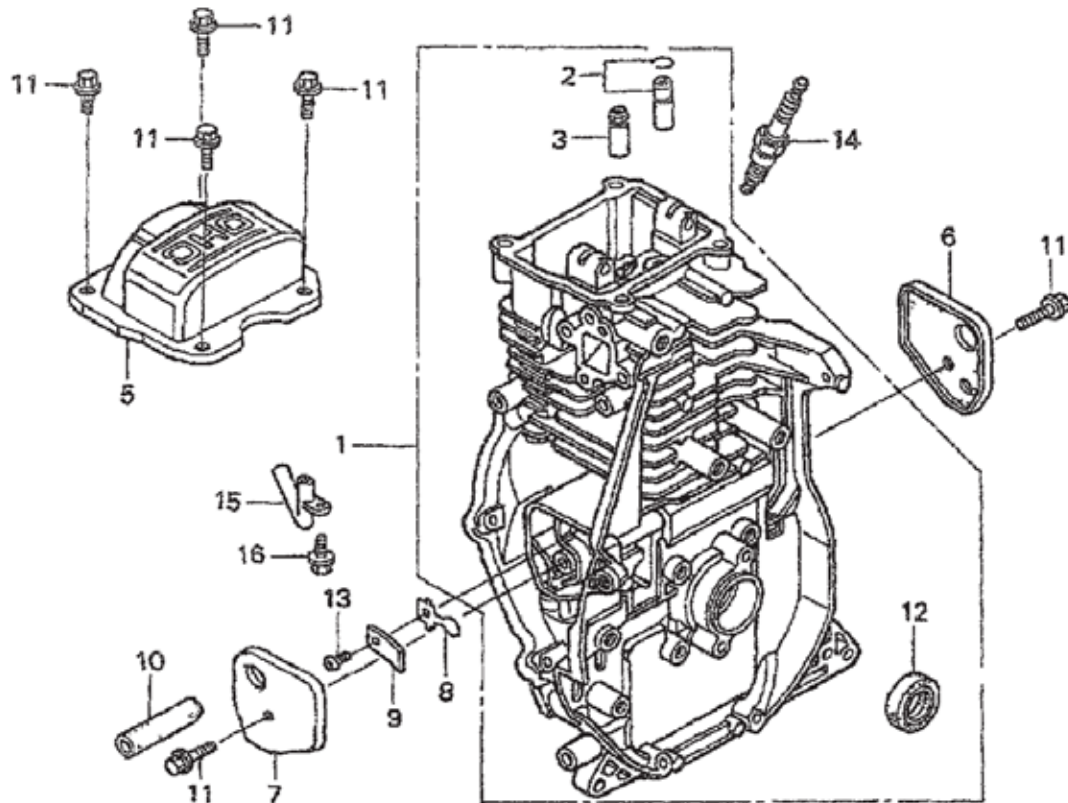


## TOOLS ASSY

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| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>                    | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|-------------------------------------|-------------|----------------|
| 1          | 981010400       | CLUTCH PULLER A                     | 1           |                |
| 2          | 983010060       | CLUTCH MOUNTER                      | 1           |                |
| 3          | 983910030       | PISTON ROD HOLDER                   | 1           |                |
| 4          | 009110044       | SOCKET HEAD BOLT 8X50 (FULL THREAD) |             |                |
|            |                 | CRANK GEAR REMOVER                  | 2           |                |
| 5          | 983910021       | CLUTCH PULLER B                     | 1           |                |
| 6          | 983010042       | SPRING CYLINDER REMOVER             | 1           |                |
| 7          | 983910010       | PISTON END REMOVER                  | 1           |                |

## HONDA GX100KRB5 ENGINE — CYLINDER BARREL ASSY.



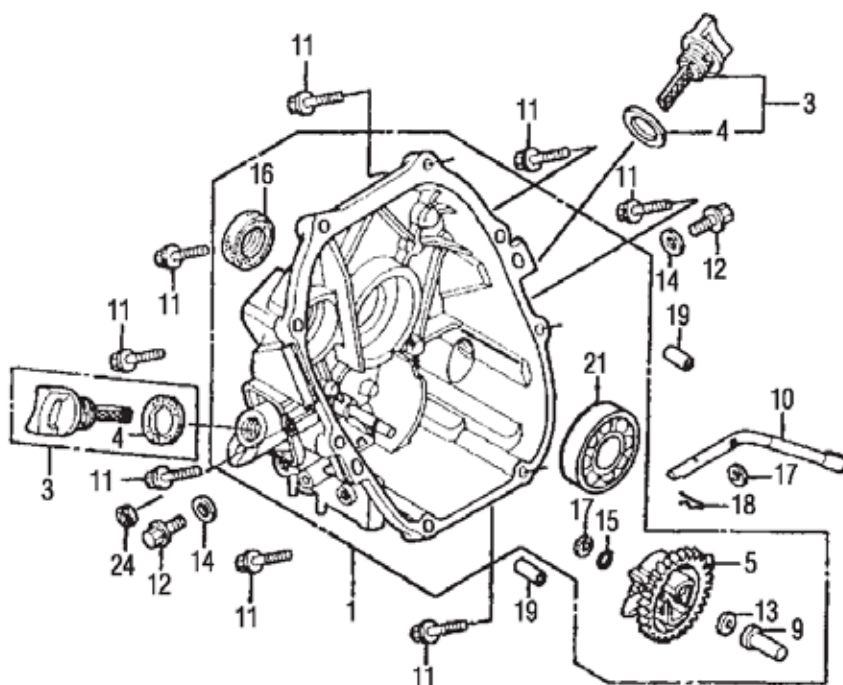


## HONDA GX100KRB5 ENGINE — CYLINDER BARREL ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>             | <u>QTY.</u> | <u>REMARKS</u>     |
|------------|-----------------|------------------------------|-------------|--------------------|
| 1          | 12000Z0D405     | BARREL ASSY., CYLINDER ..... | 1.....      | INCLUDES ITEMS W/@ |
| 2@         | 12201Z0D305     | GUIDE ASSY., EX VALVE (O.S.) | 1           |                    |
| 3@         | 12204Z0D305     | GUIDE, INLET VALVE (O.S)     | 1           |                    |
| 5          | 12311Z0D000     | COVER, HEAD T                | 1           |                    |
| 6          | 12355Z0D000     | COVER COMP A, BREATHER       | 1           |                    |
| 7          | 12365Z0D000     | COVER COMP B, BREATHER       | 1           |                    |
| 8          | 15571Z0DV71     | VALVE, OIL OUTLET            | 1           |                    |
| 9          | 15572ZM7000     | PLATE, STOPPER               | 1           |                    |
| 10         | 15721Z0DV70     | TUBE, BREATHER               | 1           |                    |
| 11         | 90014952000     | VOLT, FLANGE 6X14 (CT200)    | 6           |                    |
| 12@        | 91202KJ9003     | OIL SEAL 20X32X6             | 1           |                    |
| 13         | 93500030050A    | SCREW 3X5                    | 1           |                    |
| 14         | 9805655777      | PLUG, SPARK (CR5HSB)         | 1           |                    |
| 15         | 15171Z0DV00     | PIPE, BREATHER               | 1           |                    |
| 16         | 90008ZM7000     | BOLT 4X10                    | 1           |                    |

## **HONDA GX100KRB5 ENGINE — CRANKCASE COVER ASSY.**

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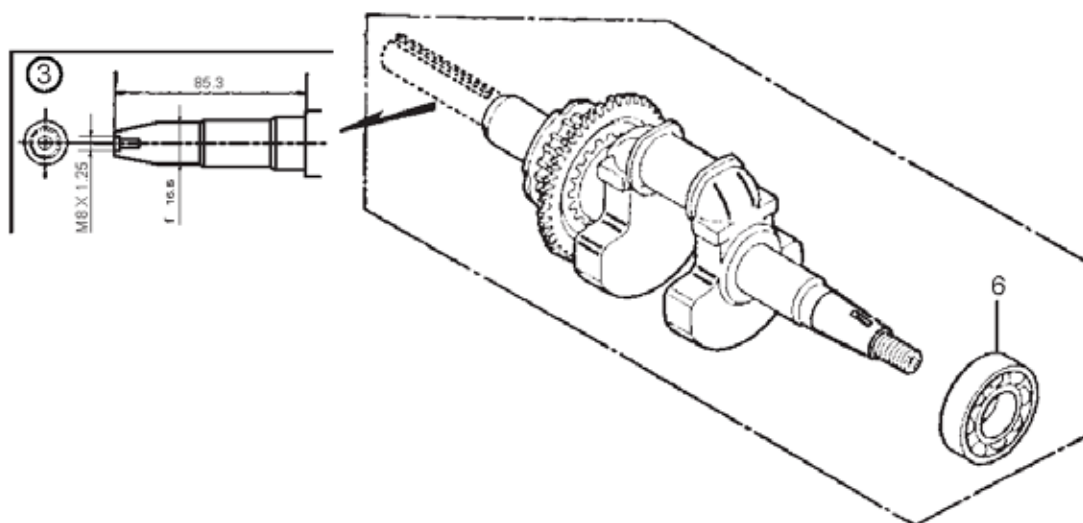


## HONDA GX100KRB5 ENGINE — CRANKCASE COVER ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>              | <u>QTY.</u> | <u>REMARKS</u>     |
|------------|-----------------|-------------------------------|-------------|--------------------|
| 1          | 11300Z0D409     | COVER ASSY., CRANK CASE ..... | 1.....      | INCLUDES ITEMS W/@ |
| 3          | 15600ZM7003     | OIL FILLER CAP ASSY .....     | 2.....      | INCLUDES ITEMS W/# |
| 4#         | 15625ZE1003     | PACKING, OIL FILLER CAP       | 2           |                    |
| 5@         | 16510ZL8000     | GOVERNOR ASSY.                | 1           |                    |
| 9@         | 16531ZE1000     | SLIDER, GOVERNOR              | 1           |                    |
| 10         | 16541Z0D000     | SHAFT, GOVERNOR ARM           | 1           |                    |
| 11         | 957010602500    | FLANGE BOLT 6x25              | 8           |                    |
| 12         | 90131ZE1000     | BOLT, DRAIN PLUG              | 1           |                    |
| 13@        | 90451ZE1000     | THRUST WASHER 6 MM            | 1           |                    |
| 14         | 90601ZE1000     | WASHER, DRAIN PLUG            | 1           |                    |
| 15@        | 90602ZE1000     | CLIP, GOVERNOR HOLDER         | 1           |                    |
| 16@        | 91202KJ9003     | OIL SEAL 20x32x6              | 1           |                    |
| 17@        | 58176           | PLAIN WASHER 6 MM             | 2           |                    |
| 18         | 9425108000      | LOCK PIN                      | 1           |                    |
| 19         | 9430108200      | KNOCK PIN                     | 2           |                    |
| 21@        | 91001Z0DV01     | BEARING, RADIAL BALL 6204     | 1           |                    |
| 24         | 91231891003     | OIL SEAL 6x11x4               | 1           |                    |

## HONDA GX100KRB5 ENGINE — CRANKSHAFT ASSY.

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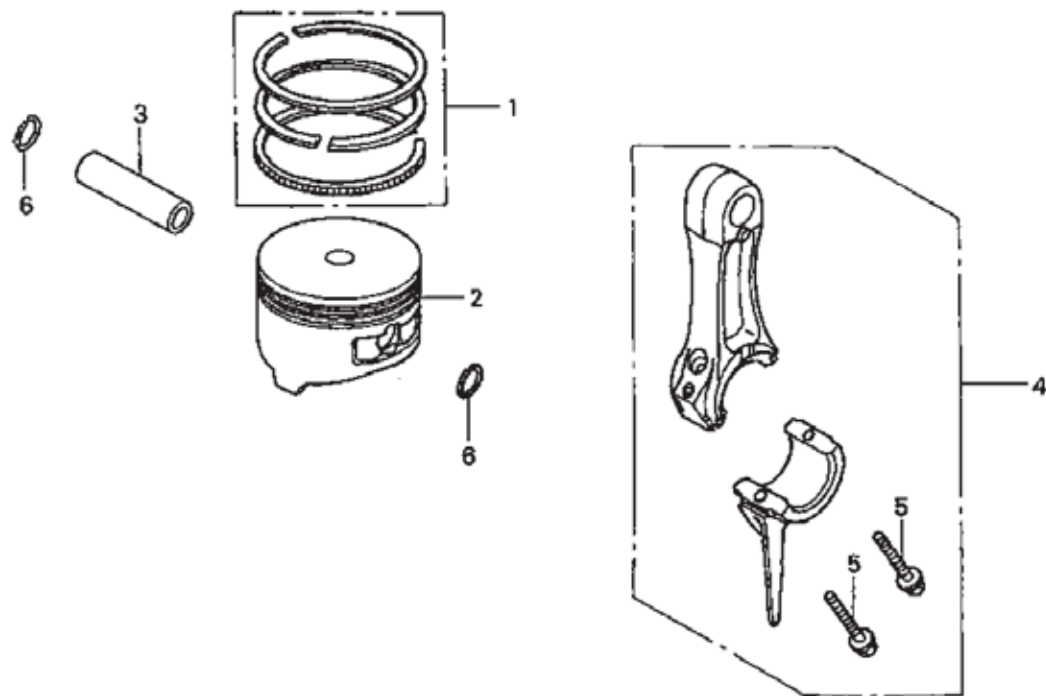
## **HONDA GX100KRB5 ENGINE — CRANKSHAFT ASSY.**

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| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>       | <u>QTY.</u> | <u>REMARKS</u>    |
|------------|-----------------|------------------------|-------------|-------------------|
| 3          | 13310Z0DV70     | CRANK SHAFT COMP ..... | 1.....      | INCLUDES ITEM W/@ |
| 6@         | 91001Z0DV01     | BEARING, RADIAL BALL   | 1           |                   |

## **HONDA GX100KRB5 ENGINE — PISTON/CONN. ROD ASSY.**

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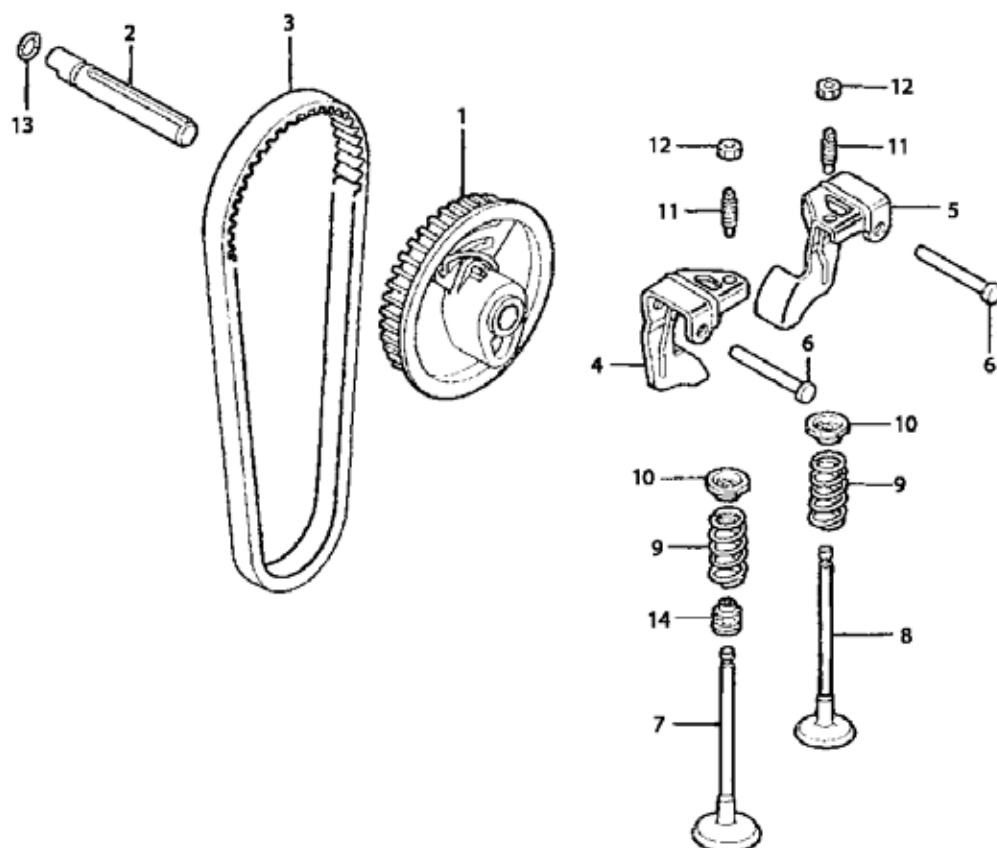


## HONDA GX100KRB5 ENGINE — PISTON/CONN. ROD ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>          | <u>QTY.</u> | <u>REMARKS</u>                 |
|------------|-----------------|---------------------------|-------------|--------------------------------|
| 1          | 13010Z0D003     | RING SET, PISTON          | 1           |                                |
| 2          | 13101Z0D000     | PISTON                    | 1           |                                |
| 3          | 13111ZE0000     | PISTON PIN                | 1           |                                |
| 4          | 13200Z0D000     | CONNECTING ROD ASSY. .... | 1.....      | INCLUDES ITEM W/@              |
| 4          | 13200Z0D305     | CONNECTING ROD ASSY. .... | 1.....      | UNDERSIZE<br>INCLUDES ITEM W/@ |
| 5@         | 90001ZM7000     | CONNECTING ROD BOLT       | 2           |                                |
| 6          | 90551ZE0000     | CLIP, PISTON PIN 13MM     | 2           |                                |

## HONDA GX100KRB5 ENGINE — CAMSHAFT ASSY.

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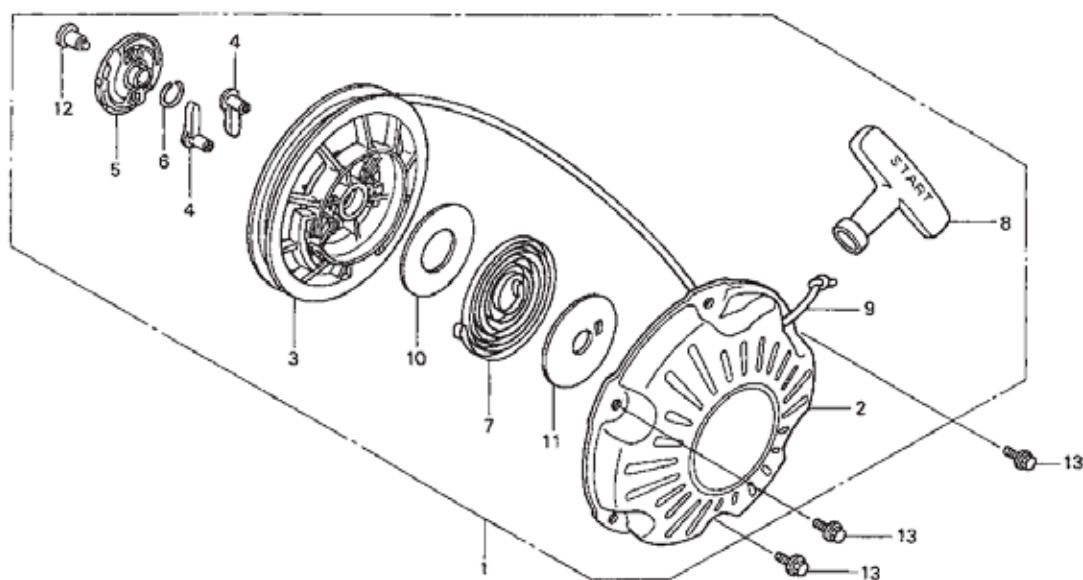


## HONDA GX100KRB5 ENGINE — CAMSHAFT ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>          | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|---------------------------|-------------|----------------|
| 1          | 14320Z0D010     | PULLEY, COMP., CAMSHAFT   | 1           |                |
| 2          | 14324Z0D000     | SHAFT, CAM PULLEY         | 1           |                |
| 3          | 14400Z0D003     | TIMING BELT (61YU7 G-200) | 1           |                |
| 4          | 14431Z0D000     | ROCKER ARM, INTAKE VALVE  | 1           |                |
| 5          | 14441Z0D000     | ROCKER ARM, EXHAUST VALVE | 1           |                |
| 6          | 14461ZL8000     | SHAFT, ROCKER ARM         | 2           |                |
| 7          | 14711Z0D000     | INLET VALVE               | 1           |                |
| 8          | 14721Z0D000     | EXHAUST VALVE             | 1           |                |
| 9          | 14751Z0D000     | SPRING, VALVE             | 2           |                |
| 10         | 14771ZM3010     | RETAINER, VALVE SPRING    | 2           |                |
| 11         | 90012333000     | SCREW, TAPPET ADJUSTING   | 2           |                |
| 12         | 90206001000     | NUT, TAPPET ADJUSTING     | 2           |                |
| 13         | 91301ZM0V31     | O-RING 6.8X1.9            | 1           |                |
| 14         | 12209KT7013     | SEAL, VALVE STEM          | 1           |                |

## HONDA GX100KRB5 ENGINE — RECOIL STARTER ASSY.

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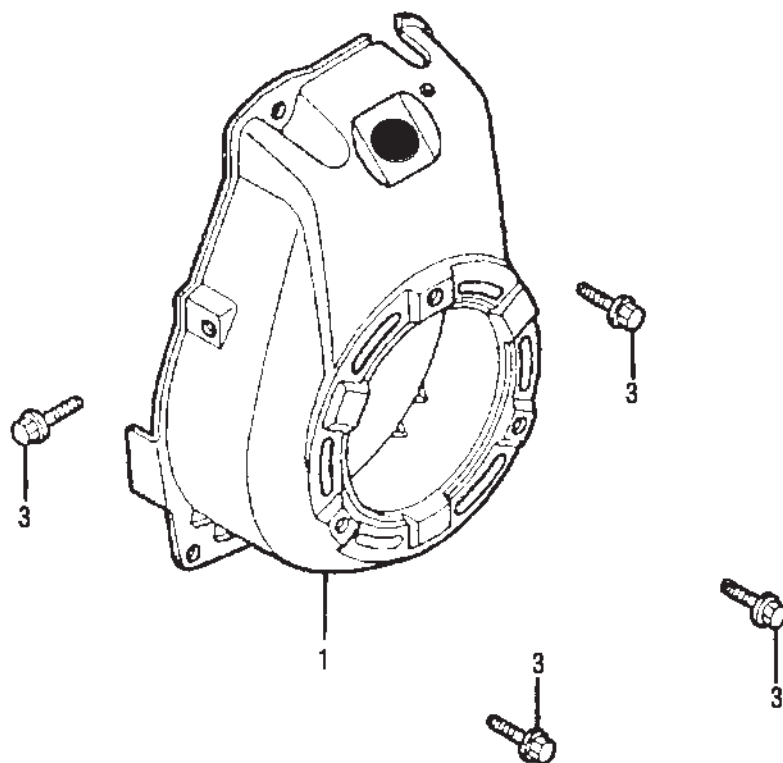


## HONDA GX100KRB5 ENGINE — RECOIL STARTER ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>          | <u>QTY.</u> | <u>REMARKS</u>     |
|------------|-----------------|---------------------------|-------------|--------------------|
| 1          | 28400Z0DV04ZA   | RECOIL STARTER ASSY ..... | 1.....      | INCLUDES ITEMS W/@ |
| 2@         | 28410Z0DV02ZA   | CASE COMP, RECOIL @5-3-5  | 1           |                    |
| 3@         | 28421Z0DV02     | REEL, RECOIL STARTER      | 1           |                    |
| 4@         | 28422ZG0W02     | RATCHET, STARTER          | 1           |                    |
| 5@         | 28433ZG0W02     | GUIDE, RATCHET            | 1           |                    |
| 6@         | 28441ZW9003     | SPRING, FRICTION          | 1           |                    |
| 7@         | 28442ZH8003     | SPRING, RECOIL STARTER    | 1           |                    |
| 8@         | 28461ZH8013     | STARTER KNOB              | 1           |                    |
| 9@         | 28462Z0DV03     | ROPE, RECOIL STARTER      | 1           |                    |
| 10@        | 28467Z0DV02     | PLATE, SIDE               | 1           |                    |
| 11@        | 28468Z0DV02     | PLATE, SLIDE              | 1           |                    |
| 12@        | 90003ZH8003     | SET SCREW                 | 1           |                    |
| 13         | 957010600800    | BOLT, FLANGE 6X8          | 3           |                    |

## HONDA GX100KRB5 ENGINE — FAN COVER ASSY.

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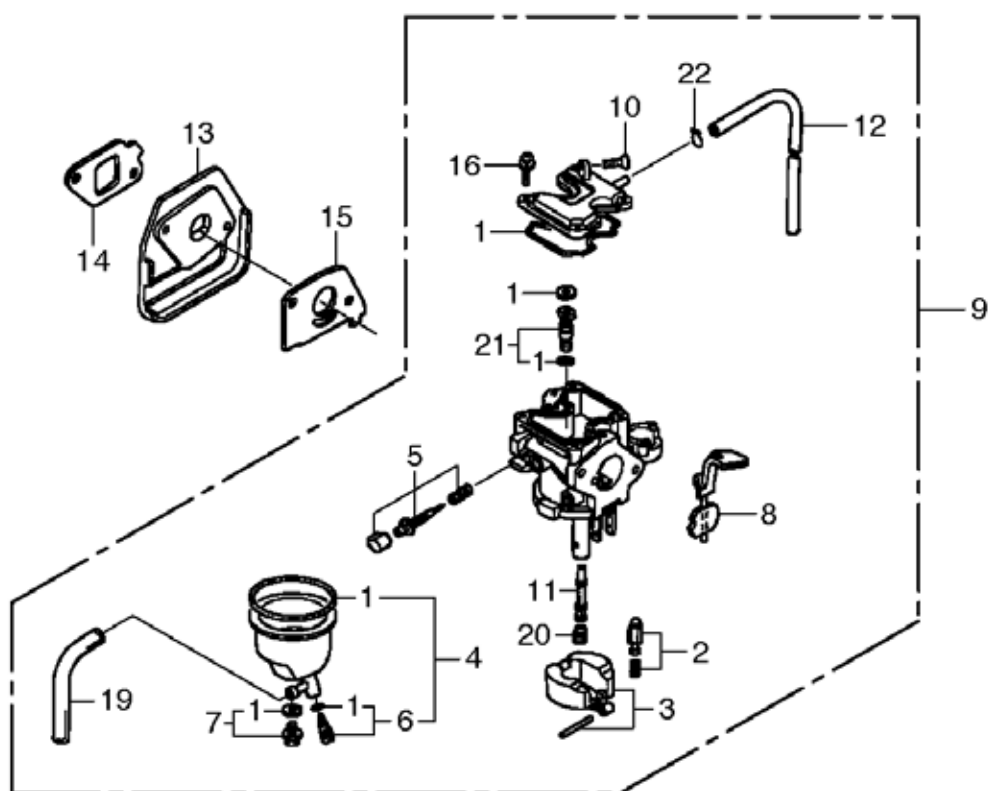


## **HONDA GX100KRB5 ENGINE — FAN COVER ASSY.**

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| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>          | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|---------------------------|-------------|----------------|
| 1          | 19610Z4ES30ZA   | FAN COVER CP              | 1           |                |
| 3          | 90014952000     | BOLT, FLANGE 6X14 (CT200) | 4           |                |

## HONDA GX100KRB5 ENGINE — CARBURETOR ASSY.

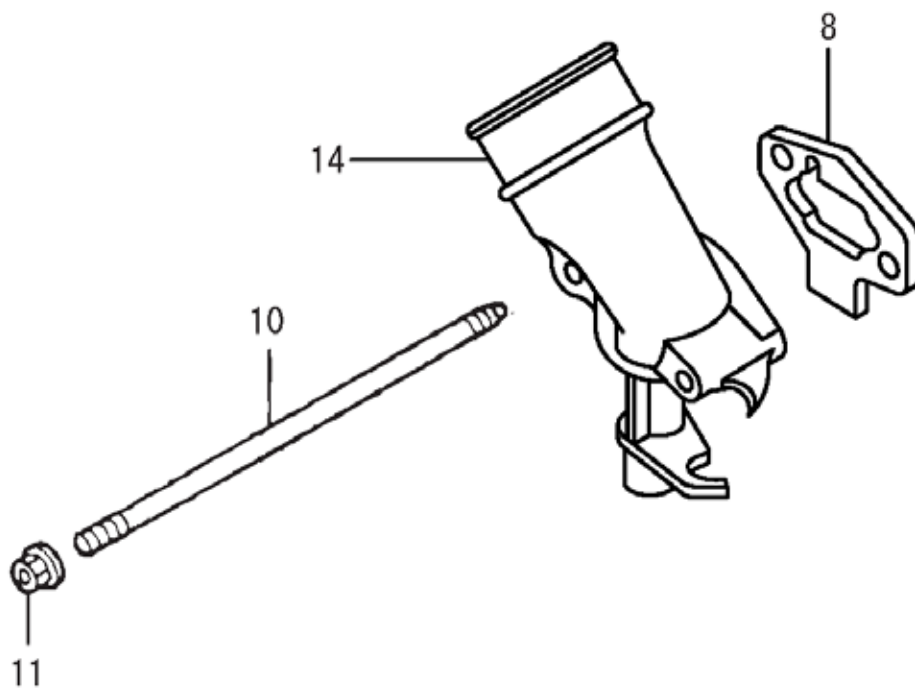


## HONDA GX100KRB5 ENGINE — CARBURETOR ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>        | <u>QTY.</u> | <u>REMARKS</u>     |
|------------|-----------------|-------------------------|-------------|--------------------|
| 1@         | 16010Z0DV21     | GASKET SET              | 1           |                    |
| 2@         | 16011ZE0005     | FLOAT VALVE SET         | 1           |                    |
| 3@         | 16013ZG0811     | FLOAT SET               | 1           |                    |
| 4@         | 16015Z0DV21     | FLOAT CHAMBER SET       | 1           |                    |
| 5@         | 16016Z0DV21     | SCREW SET               | 1           |                    |
| 6@         | 16024ZB9005     | DRAIN SCREW SET         | 1           |                    |
| 7@         | 16028ZW6611     | SCREW SET               | 1           |                    |
| 8@         | 16044Z0DS01     | LEVER SET, CHOKE        | 1           |                    |
| 9          | 16100Z4EW51     | CARBURETOR ASSY .....   | 1           | INCLUDES ITEMS W/@ |
| 10@        | 16124ZE0005     | SCREW, THROTTLE STOP    | 1           |                    |
| 11@        | 16166Z0D003     | MAIN NOZZLE             | 1           |                    |
| 12@        | 16199Z0DV21     | TUBE, VENT              | 1           |                    |
| 13         | 16211Z0D000     | INSULATOR, CARBURETOR   | 1           |                    |
| 14         | 16212Z0DV20     | PACKING, INSULATOR      | 1           |                    |
| 15         | 16221ZG0801     | PACKING, CARBURETOR     | 1           |                    |
| 16@        | 938920401208    | SCREW 4X12              | 1           |                    |
| 19@        | 950030502131    | TUBE, VINYL 3.5X6.5X100 | 1           |                    |
| 20@        | 99101ZG00580    | MAIN JET #58            | 1           |                    |
| 21@        | 99204ZE00350    | PILOT JET SET #35       | 1           |                    |
| 22         | 90602921000     | CLIP, TUBE              | 1           |                    |

## HONDA GX100KRB5 ENGINE — AIR CLEANER ASSY.

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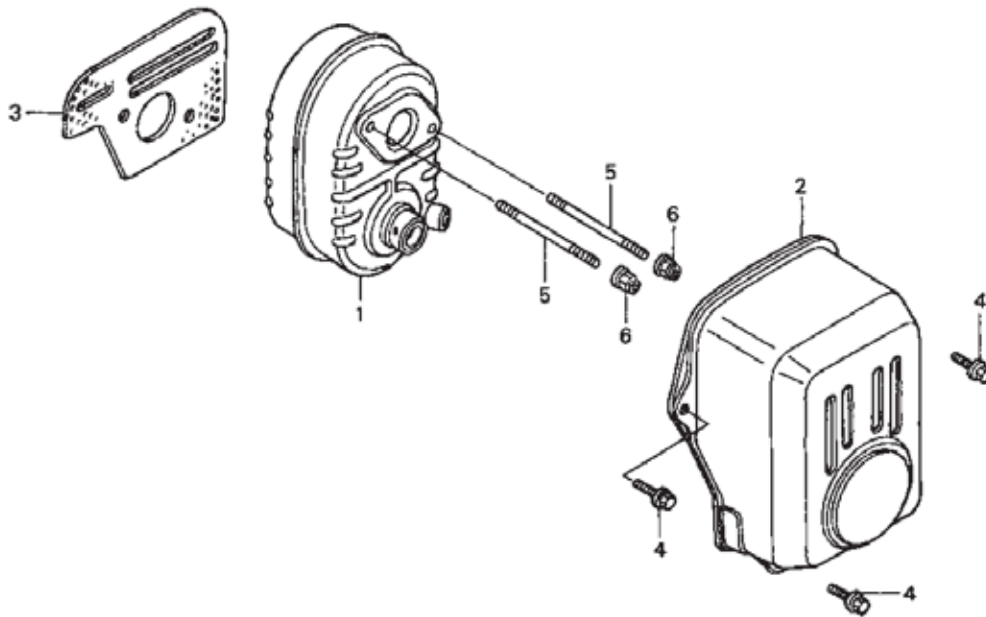
## **HONDA GX100KRB5 ENGINE — AIR CLEANER ASSY.**

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| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>     | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|----------------------|-------------|----------------|
| 8          | 17228Z0DV21     | PACKING, AIR CLEANER | 1           |                |
| 10         | 90042Z4ES30     | STUD BOLT 5X95       | 2           |                |
| 11         | 9405005000      | FLANGE NUT 5MM       | 2           |                |
| 14         | 17410Z0DS00     | ELBOW, AIR CLEANER   | 1           |                |

## HONDA GX100KRB5 ENGINE — MUFFLER ASSY.

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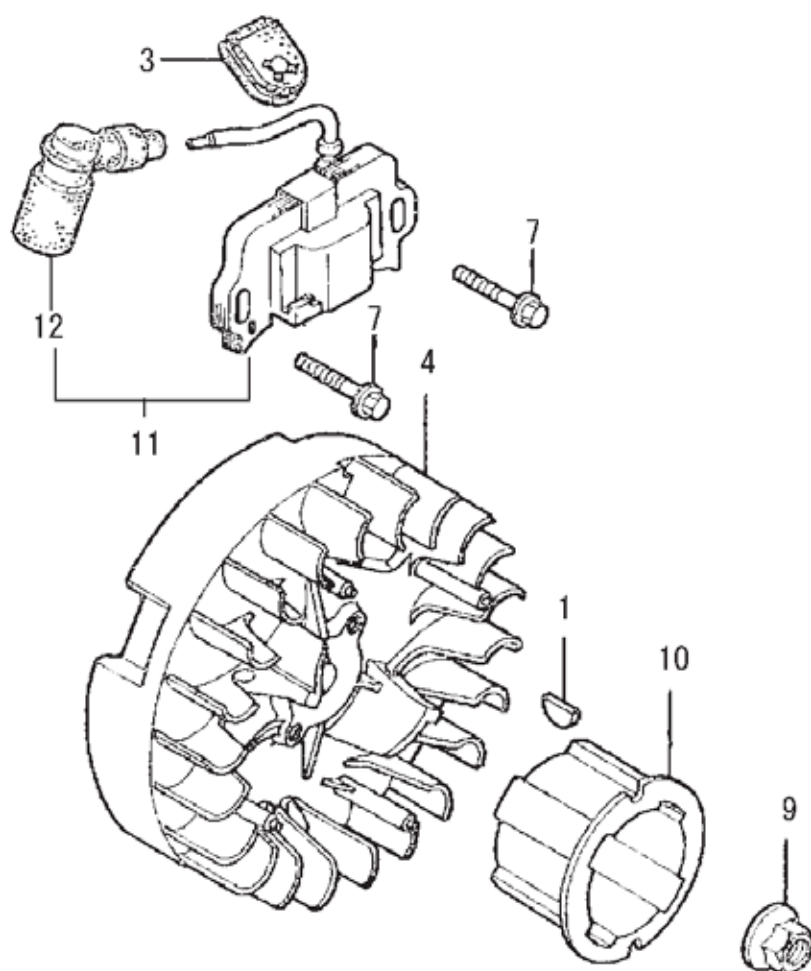
## **HONDA GX100KRB5 ENGINE — MUFFLER ASSY.**

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| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>          | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|---------------------------|-------------|----------------|
| 1          | 18310Z0DV20     | MUFFLER COMP.             | 1           |                |
| 2          | 18321Z0DV22     | MUFFLER PROTECTOR         | 1           |                |
| 3          | 18381Z0D000     | GASKET, MUFFLER           | 1           |                |
| 4          | 90014952000     | BOLT, FLANGE 6X14 (CT200) | 3           |                |
| 5          | 90048Z0DV00     | STUD BOLT 6X78            | 2           |                |
| 6          | 90343ZE6000     | NUT, SELF-LOCK 6MM        | 2           |                |

## **HONDA GX100KRB5 ENGINE — FLYWHEEL IGNITION ASSY.**

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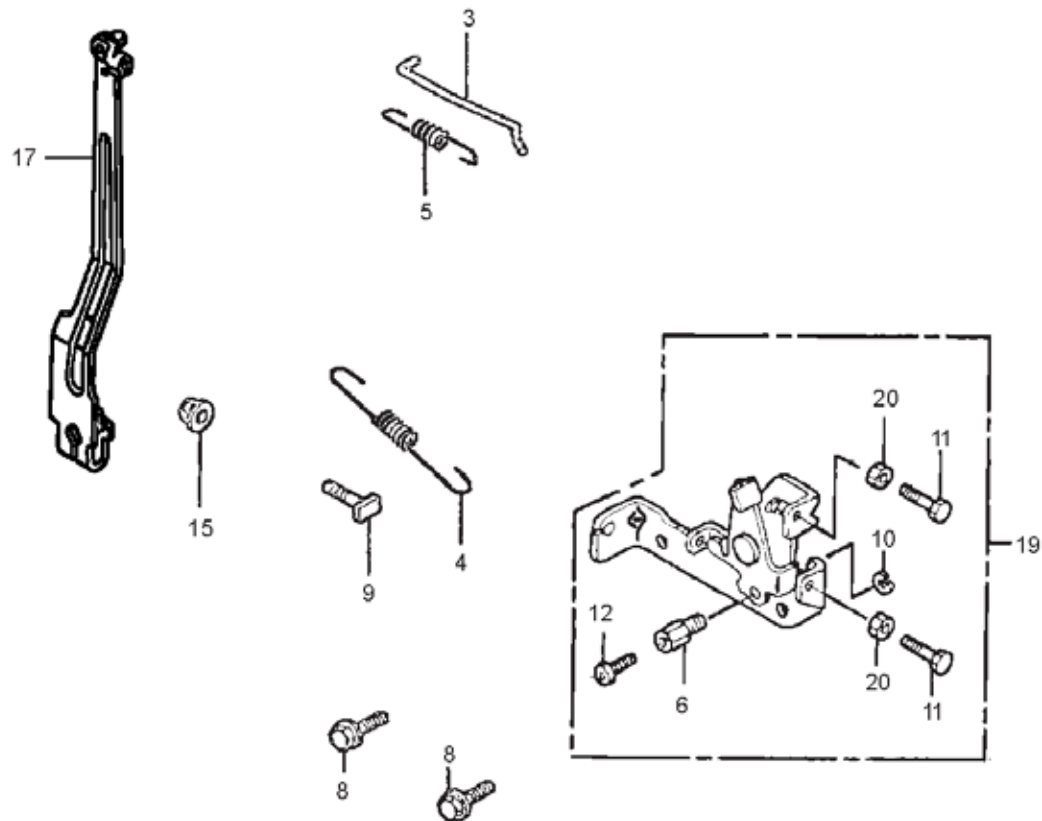


## HONDA GX100KRB5 ENGINE — FLYWHEEL IGNITION ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>         | <u>QTY.</u> | <u>REMARKS</u>    |
|------------|-----------------|--------------------------|-------------|-------------------|
| 1          | 13331ZM7000     | WOODRUFF KEY 25X18       | 1           |                   |
| 3          | 30564ZA5000     | GROMMET, CORD            | 1           |                   |
| 4          | 131110Z0D003    | FLYWHEEL COMP            | 1           |                   |
| 7          | 90022888010     | FLANGE BOLT 6X20         | 2           |                   |
| 9          | 9405012000      | FLANGE NUT M12           | 1           |                   |
| 10         | 28451Z0DV03     | STARTER PULLEY           | 1           |                   |
| 11         | 30500Z0DV02     | IGNITION COIL ASSY ..... | 1.....      | INCLUDES ITEM W/@ |
| 12@        | 30700Z0DV01     | TERMINAL ASSY            | 1           |                   |

## HONDA GX100KRB5 ENGINE — CONTROL ASSY.

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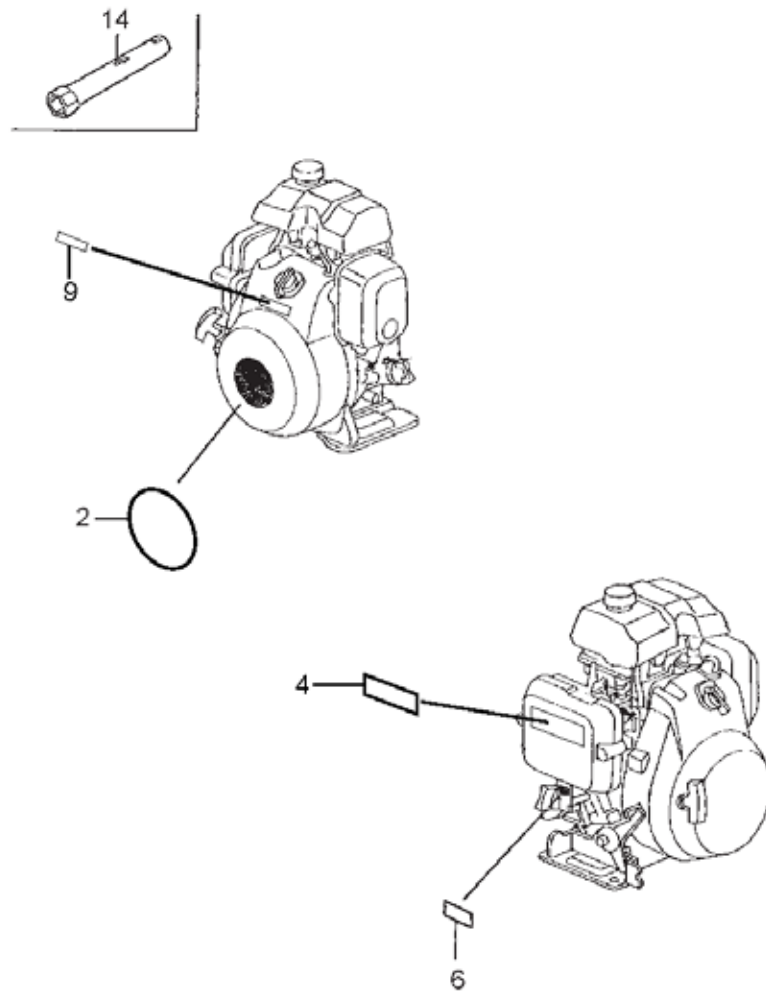


## HONDA GX100KRB5 ENGINE — CONTROL ASSY.

| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>          | <u>QTY.</u> | <u>REMARKS</u>     |
|------------|-----------------|---------------------------|-------------|--------------------|
| 3          | 16555Z0DV20     | GOVERNOR ROD              | 1           |                    |
| 4          | 16561Z0DV20     | GOVERNOR SPRING           | 1           |                    |
| 5          | 16562Z0DV20     | SPRING, THROTTLE RETURN   | 1           |                    |
| 6@         | 16594883010     | HOLDER, WIRE              | 1           |                    |
| 8          | 90014952000     | BOLT, FLANGE 6X14 (CT200) | 2           |                    |
| 9          | 90015ZE5010     | BOLT, GOVERNOR ARM        | 1           |                    |
| 10@        | 90605230000     | CIR CLIP                  | 1           |                    |
| 11@        | 92301050220A    | BOLT 5X20                 | 1           |                    |
| 12@        | 0043504060      | SCREW 4X6                 | 1           |                    |
| 15         | 9405006000      | FLANGE NUT 6MM            | 1           |                    |
| 17         | 16550Z0DV21     | GOVERNOR ARM              | 1           |                    |
| 19         | 16500Z4ES30     | CONTROL ASSY .....        | 1.....      | INCLUDES ITEMS W/@ |
| 20@        | 940010500005    | NUT M5                    | 2           |                    |

## HONDA GX100KRB5 ENGINE — LABELS ASSY.

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## HONDA GX100KRB5 ENGINE — LABELS ASSY.

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| <u>NO.</u> | <u>PART NO.</u> | <u>PART NAME</u>       | <u>QTY.</u> | <u>REMARKS</u> |
|------------|-----------------|------------------------|-------------|----------------|
| 2          | 87521ZODV02     | LABEL, TRADE MARK      | 1           |                |
| 4          | 87516Z0J000     | MARK, OPERATOR CAUTION | 1           |                |
| 6          | 87601Z4EW50     | MARK, TYPE (KRBF)      | 1           |                |
| 9          | 87539Z0J000     | MARK, EX. CAUTION      | 1           |                |
| 14         | 89216130690     | WRENCH, SPARK PLUG     | 1           |                |

# TERMS AND CONDITIONS OF SALE — PARTS

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## PAYMENT TERMS

Terms of payment for parts are net 30 days.

## FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

## MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

## RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
  - a. The parts numbers and descriptions must match the current parts price list.
  - b. The list must be typed or computer generated.
  - c. The list must state the reason(s) for the return.
  - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
  - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
  - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
  - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
  - c. Any line item with an extended dealer net price of less than \$5.00.
  - d. Special order items.
  - e. Electrical components.
  - f. Paint, chemicals, and lubricants.
  - g. Decals and paper products.
  - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

## PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

## SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

## LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

## LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

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# OPERATION AND PARTS MANUAL

## HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL  
NUMBER ON-HAND WHEN CALLING

### **UNITED STATES**

#### ***Multiquip Corporate Office***

18910 Wilmington Ave.  
Carson, CA 90746  
Contact: mq@multiquip.com

Tel. (800) 421-1244  
Fax (800) 537-3927

#### ***Service Department***

800-421-1244  
310-537-3700

Fax: 310-537-4259

#### ***Technical Assistance***

800-478-1244

Fax: 310-943-2238

#### ***MQ Parts Department***

800-427-1244  
310-537-3700

Fax: 800-672-7877  
Fax: 310-637-3284

#### ***Warranty Department***

800-421-1244  
310-537-3700

Fax: 310-943-2249

### **MEXICO**

#### ***MQ Cipsa***

Carr. Fed. Mexico-Puebla KM 126.5  
Momoxpan, Cholula, Puebla 72760 Mexico  
Contact: pmastretta@cipsa.com.mx

Tel: (52) 222-225-9900  
Fax: (52) 222-285-0420

### **CANADA**

#### ***Multiquip***

4110 Industriel Boul.  
Laval, Quebec, Canada H7L 6V3  
Contact: jmartin@multiquip.com

Tel: (450) 625-2244  
Tel: (877) 963-4411  
Fax: (450) 625-8664

### **UNITED KINGDOM**

#### ***Multiquip (UK) Limited Head Office***

Unit 2, Northpoint Industrial Estate,  
Globe Lane,  
Dukinfield, Cheshire SK16 4UJ  
Contact: sales@multiquip.co.uk

Tel: 0161 339 2223  
Fax: 0161 339 3226

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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